

AUG 6 1964

CRPL-F 239 PART B

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PART B
SOLAR - GEOPHYSICAL DATA

ISSUED
JULY 1964

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

SOLAR - GEOPHYSICAL DATA

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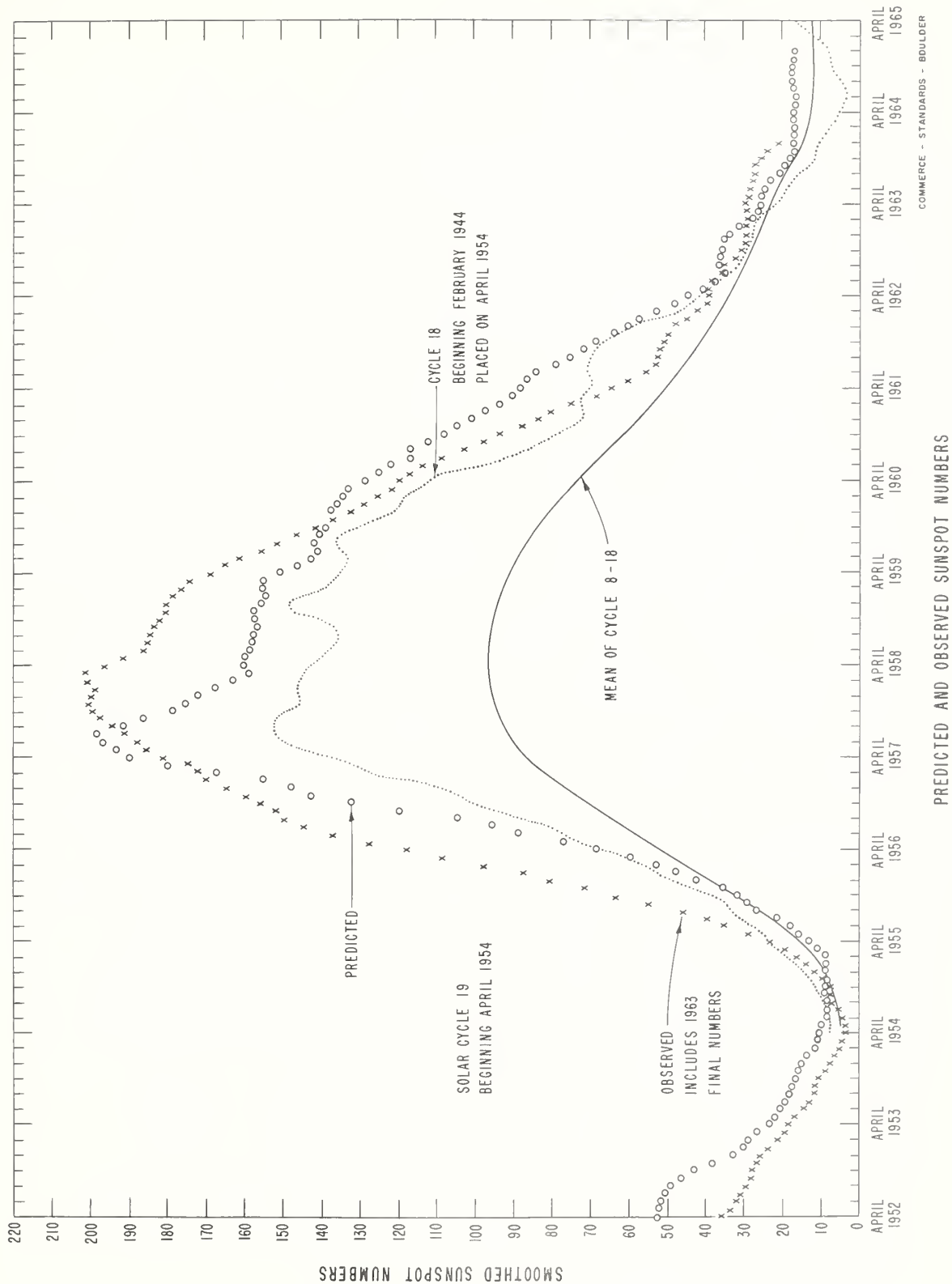
- (a) IQSY Alert Periods - May 1964

The descriptive text was republished November 1963.

DAILY SOLAR INDICES

May 1964	American Relative Sunspot Numbers R_A'
1	0
2	0
3	0
4	11
5	14
6	9
7	10
8	10
9	9
10	4
11	0
12	0
13	0
14	0
15	5
16	16
17	14
18	9
19	3
20	3
21	1
22	10
23	13
24	10
25	3
26	1
27	10
28	11
29	11
30	11
31	12
Mean:	6.8

June 1964	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	8	67.7
2	8	68.0
3	8	68.2
4	8	68.2
5	7	67.8
6	0	68.4
7	14	69.6
8	0	69.8
9	7	69.0
10	7	70.3
11	14	70.3
12	23	68.9
13	11	70.2
14	18	70.5
15	24	71.6
16	23	70.6
17	11	71.1
18	22	71.7
19	23	70.1
20	19	70.4
21	9	69.7
22	0	69.5
23	0	67.4
24	0	68.0
25	0	67.7
26	0	67.6
27	0	67.4
28	0	67.3
29	7	67.1
30	7	67.2
Mean:	9.3	69.0



CALCIUM PLAGE AND SUNSPOT REGIONS

JUNE 1964

June 1964	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTATIONS)	DATE FIRST SEEN (1)	DURATION (DAYS)	CMP VALUES		HISTORY
				AREA	INT					AREA	COUNT	
0.5	N08	7341(2)	New	(200)	(2.5)	b - d	1	6/5	1	30	1	ℓ - d
1.5	N36	7331(2)	New	100	1.5	b - d	1	6/2	1			
1.6	S05	7324	New	400	1.5	b - d	1	5/29	7			
1.8	N05	7316	New	1400	3	ℓ - d	1	5/26	13			
2.5	N31	7328(2)	New	100	2	b - d	1	6/1	1			
2.6	S30	7329(2)	New	100	1.5	b - d	1	6/1	1			
2.7	N28	7332	New	100	1.5	b - d	1	6/2	2			
3.3	S17	7333(2)	New	100	1.5	b - d	1	6/2	1			
3.6	N06	7346	New	(300)	(2.5)	b - d	1	6/8	2			
3.7	N06	7330	New	200	2	b - d	1	6/1	6			
4.5	S12	7342(2)	New	(200)	(1.5)	b - d	1	6/7	1			
4.8	N07	7336	New	100	1	b - d	1	6/3	3			
5.2	N35	7338	New	300	1	b - d	1	6/4	2			
5.5	N32	7349	New	(200)	(2.5)	b - d	1	6/10	2			
6.3	S23	7339	New	200	1	b - d	1	6/4	2			
7.1	S08	7334	New	(200)	(1.5)	b - d	1	6/2	3			
7.7	N25	7335	7273	600	1.5	ℓ - d	3	6/2	8			
8.2	N28	7350	New	(200)	(3)	b - d	1	6/10	2			
8.2	N06	7354(2)	New	(200)	(1.5)	b - d	1	6/11	1			
8.1	N08	7340(2)	New	(200)	(1)	b - d	1	6/4	1			
9.5	S02	7358	New	(200)	(1.5)	b - d	1	6/12	3			
11.0	N24	7362(2)	New	(300)	(3)	b - d	1	6/14	1			
11.2	N08	7359(2)	New	200	1.5	b - d	1	6/12	1			
11.5	N01	7344(2)	New	(100)	(2)	b - d	1	6/7	1			
11.7	N32	7343	New	300	2.5	b - d	1	6/7	10			
12.0	N47	7355(2)	New	100	1	b - d	1	6/11	1			
12.7	N15	7351	New	100	1.5	b - d	1	6/10	4			
13.1	N21	7367	New	(100)	(1.5)	b - d	1	6/16	1			
13.1	N45	7356	New	200	1	b - d	1	6/11	2			
13.5	N26	7345(2)	New	(400)	(1)	ℓ - d	1	6/7	1			
13.7	N34	7352(2)	New	(200)	(1.5)	b - d	1	6/10	1	190	4	b - d
13.9	N12	7363	New	100	1.5	b - d	1	6/14	1			
14.2	N04	7357	New	800	3	b - d	1	6/11	10			
14.5	S43	7364	New	200	1.5	b - d	1	6/14	1			
15.1	N27	7348	New	1200	2.5	ℓ - d	1	6/8	13			
15.1	N37	7365	New	100	1.5	b - d	1	6/14	1	10	2	b - d
15.3	N06	7347	7286	900	2.5	ℓ - d	2	6/8	13			
15.9	N29	7353	New	(100)	(1)	ℓ - d	1	6/10	4			
16.3	S21	7368	New	200	2	b - d	1	6/16	1			
16.4	N15	7360	New	(100)	(1.5)	b - d	1	6/12	2			
17.2	S34	7374	New	(400)	(2)	b - d	1	6/22	1			
17.9	N20	7370	New	200	1.5	b - d	1	6/17	2			
18.1	S22	7375	New	(100)	(1.5)	b - d	1	6/22	1			
18.1	N10	7366	New	(200)	(1)	b - d	1	6/14	1			
19.1	N26	7361	New	1000	3.5	ℓ - d	1	6/12	14			
19.8	S10	7372	New	200	2	b - d	1	6/18	2	150	7	b - d
19.3	N24	7371	New	600	3.5	b - d	1	6/17	9			
21.4	N08	7373	New	200	1.5	b - d	1	6/20	1			
21.6	N03	7377	New	(200)	(1.5)	b - d	1	6/24	1			
21.8	N11	7369	New	(200)	(1)	ℓ - d	1	6/16	1			
27.3	N23	7381	New	500	1.5	b - d	1	6/28	1			
28.6	N07	7376	New	(400)	(1)	ℓ - d	1	6/24	1			
30.5	N49	7379	New	(200)	(1)	b - d	1	6/27	1			
30.5	N10	7380	New	200	2	b - d	1	6/27	2			
30.9	N06	7378	New	(300)	(1.5)	ℓ - d	1	6/24	1			

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(1) No calcium plage data were secured at the McMath-Hulbert Observatory on June 15 and 23, 1964.

(2) These very small and ephemeral plages last for only one day.

It is worthy of note that, for the first time during the declining phase of the cycle, there were no reportable calcium plages on the sun on June 26, 1964.

MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

11b

JUNE 1964

June 1964	TIME MEAS. UT	LAT	MER DIST	TYPE	June 1964	TIME MEAS UT	LAT	MER DIST	TYPE
1	1420	E02	N07	α_p	13	1915	E07 E67	N05 N25	β_f α_p^*
2	2255	W17	N07	α_p	14	1735	W05 E55	N05 N25	β β_p^*
3	2310	W30	N07	α_p	15	No Obs.			
4-7	No Spots				16	2220	E26	N25	β_f^*
8	No Obs.				17	2335	E07 E14 E27	N27 N26 N26	α_f^* $\beta\gamma^*$ β^*
9	No Spots				18-20	No Obs.			
10	No Obs.				21-28	No Spots			
11	2215	E30 E37	N04 N24	β_f β_p^*	29 July 1	2235 0005	E61 E46	S04 S05	α_p α_p
12	2345	E18	N05	α_f					

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* New cycle

PROVISIONAL CORONAL LINE EMISSION INDICES

JUNE 1964

CMP June 1964	North East quadrant (observed 7 days earlier)				South East quadrant (observed 7 days earlier)				South west quadrant (observed 7 days later)				North West quadrant (observed 7 days later)			
	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁
1	x	x	x	x	x	x	x	x	18	28	14	25	19	22	15	20
2	x	x	x	x	x	x	x	x	8	9	10	12	9	12	10	13
3	x	x	x	x	x	x	x	x	7	8	12	18	7	11	16	20
4	x	x	12	17	x	x	11	12	0	0	x	x	0	0	x	x
5	7	9	x	x	x	8	x	x	x	x	15	19	x	x	14	18
6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	x	x	x	x	x	x	x	x	x	x	x	22a	x	x	15a	24a
8	x	x	x	x	x	x	x	x	0	0	19	28	x	9	14	20
9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10	x	x	x	x	x	x	x	x	1	3	15	20	9	14	12	16
11	x	x	15	30	x	x	13	16	5	7	12	18	5	7	11	14
12	x	x	x	x	x	x	x	x	8	14	27	43	14	25	19	28
13	x	x	x	x	x	x	x	x	11	12	17	20	9	12	13	22
14	13	20	24	28	8	8	15	20	x	x	19	40	x	x	14	30
15	18	22	29	50	14	14	20	33	8	13	11	15	13	18	10	14
16	14	24	13	24	6	7	9	12	9	31	13	19	9	11	12	15
17	13	20	13	18	0	0	13	20	0	0	14	21	8	17	14	20
18	2	8	x	x	0	0	x	x	x	x	x	x	x	x	x	x
19	x	x	15	18	x	x	13	14	x	x	x	24	x	x	13	20
20	x	x	x	x	x	x	x	x	x	x	14	x	x	x	x	x
21	x	x	20a	26a	x	x	13a	16a	x	x	12	15	x	x	11	15
22	5	7	15	20	2	6	14	18	1	3	x	x	x	8	x	x
23	x	x	x	x	x	x	16	x	x	x	11	13	x	x	9	11
24	7	9	12	16	4	6	10	22	x	x	x	x	x	x	x	x
25	6	6	8	10	4	5	10	12	3	6	x	x	6	11	x	x
26	8	11	15	26	5	14	20	24	x	x	x	x	x	x	x	x
27	12	14	14	18	12	13	16	20	x	x	x	x	x	x	x	x
28	x	x	9	21	x	x	17	26	x	x	7	8	x	x	8	12
29	10	13	20	26	6	7	15	25	x	x	x	x	x	x	x	x
30	9	20	12	16	3	6	12	15	x	x	x	x	x	x	x	x

x = no observations

* = yellow line

a = index computed from low weight data

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SOLAR FLARES

JUNE 1964

OBSERVATORY	DATE JUNE 1964	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS COND.	TIME U T	MEASUREMENTS			PROVISIONAL LONGSPHERIC EFFECT	
		START	END	APPROX. LAT.	APPROX. LONG.	REGION					MEAS AREA Sq Deg.	COORR. AREA Sq Deg.	MAX WIDTH Ha		MAX INT. %
SAC PEAK	01	0545	0605	NO FLARE	PATROL	1- 1- 1- 1- 1-	C				.63	.61	17		
	01	2054	2119	NO6 W04											
	02	0145	0155	NO FLARE	PATROL										
	02	0245	0305	NO FLARE	PATROL										
	02	0805	0808	NO5 W10	7316										
CAPRI-S	02	1631	1650	D	NO6 W10	1- 1- 1- 1-	2 2 2 2				.50 .70 .20 .20	.50 .70 .40 .70	10 10		
	02	1920	1939	N14 E58											
	02	1931	1942	N63 E70											
	02	1942	1958												
MCMATH	03	0135	0200	NO FLARE	PATROL	1- 1- 1- 1- 1-	2 2 2 2 2				.70 .70	.70 .70			
	03	0230	0325	NO FLARE	PATROL										
	03	0435	0605	NO FLARE	PATROL										
	03	1556	1615	D	NO7 W23										7316
	03	1706	1720	NO7 W24	7316										
SAC PEAK	04	0155	0400	NO FLARE	PATROL	1- 1- 1- 1- 1-	C				.16 .40	.21 .60	18		
	04	0450	0500	NO FLARE	PATROL										
	05	0215	0250	NO FLARE	PATROL										
	05	0330	0420	NO FLARE	PATROL										
	05	1508	1521	1510	NO5 W49										7316
CAPRI-S	06	0200	0450	NO FLARE	PATROL	1- 1- 1- 1- 1-	3 3 3 3 3				.30 .30 .40	.30 .30 .40			
	06	1305	1320	N25 E90											
	06	1414	1427	N25 E90											
	06	1430	1505	N25 E90											
	06	1430	1505												
CAPRI-S	07	0814	0820	E	NO5 E90	6 D	3				1.50	1.50			
	07	0853	0910	D	NO3 E90										
	07	0857	0902	NO2 E87	0855										
	07	0900	0915	NO5 E85	.17 0858										
	07	0932	0940	NO5 E85	.60 0908										
CAPRI-S	07	0956	1005	E	NO5 E85	1- 1- 1- 1- 1-	3 3 3 3 3				.50 .40	.50 .40			
	07	1155	1215	NO FLARE	PATROL										
	08	0315	0335	NO FLARE	PATROL										
	08	1125	1200	NO FLARE	PATROL										
	08	1422	1444	D	N28 E90										7348
OTTAWA	08	1425	1435	D	N32 E90	1- 1+ 1- 1- 1-	C				1.09 2.00	2.00			
	08	1820	1830	NO FLARE	PATROL										7348
	08	1843	1850	1846	N22 E79										
	08	2350	2400	NO FLARE	PATROL										
	08	2350	2400												
SAC PEAK	09	0330	0405	NO FLARE	PATROL	1- 1- 1- 1- 1-	C				.28	.72	17		
	09	0910	0915	NO FLARE	PATROL										
	09	0953	1003	NO1 E15											
	09	1000	1005	N27 E73											
	09	2340	2400	N28 E75											
ARCETRI	10	0350	0425	NO FLARE	PATROL	1- 1- 1- 1- 1-	3 3 3 3 3				.49 .40 .65	.51 1.60 1.78			
	10	0350	0425	NO FLARE	PATROL										
	10	0350	0425	NO FLARE	PATROL										
	10	0350	0425	NO FLARE	PATROL										
	10	0350	0425	NO FLARE	PATROL										

COMMERCIAL - STANDARDS - BOULDER

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

JUNE 1964

OBSERVATORY	DATE JUNE 1964	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM POR- TANCE	OBS. COND.	MEASUREMENTS		MAX. WIDTH He	MAX INT. I _h	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MER DIST				TIME — U T	MEAS. AREA Sq. Deg.			
ONDRE JOV	10	0708	0735	0710	0711	0710	1-	3	0710	.33	.33	2.10	
MANILA	10	0709	0716	N26 E60	N26 E65		1-	2	0711	.49	.63		
ARCTETRI	10	1035	1044 D	N27 W31	N27 W31		1-	3	1035	.60	1.00		
HTC-PROVEN	10	1048	1255	N05 E49	N05 E49		1-		1205	.30	.40		
MCMATH	10	1225	1241 D	N05 E50	N05 E50	24	1-	1	1228	.30	3.00		
WENDEL	10	1204	1228	N23 E53	N23 E53		1-			.60	1.30		
MCMATH	10	1207	1221	N24 E56	N24 E56		1-	2	1212	.30	.47		
SAC PEAK	10	1212	1224	N23 E58	N23 E58		1-		1215	.60	1.00		17
HTC-PROVEN	10	1212	1234	N24 E55	N24 E55		1-	1	1420	.50	.60		
MCMATH	10	1419	1432 D	N29 W32	N29 W32		1-	1	1430	.50	1.00		
MCMATH	10	1428	1432 D	N24 E56	N24 E56		1-	1		.28	.43		17
SAC PEAK	10	1428	1448	N23 E56	N23 E56	12	1-			3.00	.62		
WENDEL	10	1638	1650	N23 E51	N23 E51		1-	C		.43	.90		17
SAC PEAK	10	1639	1651	N23 E55	N23 E55		1-		1641	.30	.30		10
HTC-PROVEN	10	1640	1648	N24 E52	N24 E52		1-	2	1937	.14	.16		17
LOCKHEED	10	1928	1958	N29 W36	N29 W36		1-	2	2132	.40	1.00		20
SAC PEAK	10	1930	1950	N28 W35	N28 W35		1-	2	2211	.60	.70		10
LOCKHEED	10	2127	2140	N35 W70	N35 W70		1-	C		1.00	1.44		18
LOCKHEED	10	2202	2235	N24 E52	N24 E52		1-	2	2230	.20	.40		10
SAC PEAK	10	2204	2211	N24 E54	N24 E54		1-	2	0006	.40	.50		10
LOCKHEED	10	2222	2245	N35 W70	N35 W70		1-			.33	.33		
LOCKHEED	10	2355	0038	N04 E45	N04 E45		1-	2	0144	.29	.29		18
MANILA	11	0142	0151	N25 E51	N25 E51		1-	C	1456	.30	.88		
SAC PEAK	11	0245	0320	NO FLARE	NO FLARE		1-	C	1505	.24	.29		
OTTAWA	11	1445	1510	N33 W81	N33 W81		1-	C	1506	.50	.80		
OTTAWA	11	1454	1501	N32 W83	N32 W83		1-	2	1637	.92	1.32		
MCMATH	11	1501	1512	N26 E42	N26 E42	7348	1-	3	1709	.30	.30		10
HTC-PROVEN	11	1503	1517	N25 E43	N25 E43		1-	3	1713	.18	.53		
ARCTETRI	11	1505	1515	N27 E41	N27 E41		1-	1	2039	.40	.60		17
LOCKHEED	11	1637	1720	N06 E30	N06 E30		1-	C		.27	.31		18
LOCKHEED	11	1706	1718	N32 W83	N32 W83		1-	C		.35	.39		
OTTAWA	11	1710	1718	N26 E40	N26 E40	7348	1-	1					
MCMATH	11	2037	2050	N25 E39	N25 E39		1-	C					
SAC PEAK	11	2038	2048	N24 E38	N24 E38		1-	C					
SAC PEAK	11	2309	2329	NO FLARE	NO FLARE		1-						
WENDEL	12	0215	0355	N33 W06	N33 W06	8 D	1-	3	0850	.75	.98		
ARCTETRI	12	0516	0524 D	N27 E32	N27 E32		1-	2	2257	.20	.20		10
LOCKHEED	12	0850	0920 D	N28 E28	N28 E28		1-	2		.17	.17		
LOCKHEED	12	2245	2330	N04 E10	N04 E10		1-	3	0331	.80	.80		
MANILA	13	0329	0336	N05 E15	N05 E15		1-	3	1340				
CAPRI-S	13	1328	1400 D	N05 E10	N05 E10		1-	3	1618	.30	.50	1.90	10
HTC-PROVEN	13	1551	1620	N05 E07	N05 E07		1-	2	2100	.40	.70		20
ONDRE JOV	13	1617	1628	N24 E65	N24 E65		1-	2	2256	.33	.33		
LOCKHEED	13	2042	2130	N06 E03	N06 E03		1-	2	0211	.50	.50		
LOCKHEED	13	2253	2310	N25 E62	N25 E62		1-	2	0235				
MANILA	14	0209	0214				1-						
MANILA	14	0230	0246				1-						

COMMERCE - STANDARDS - BOLLARDS

SOLAR FLARES

JUNE 1964

OBSERVATORY	DATE JUNE 1964	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS COND.	MEASUREMENTS			MAX WIDTH H _g	MAX INT °	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG. DIST.				TIME — U.T.	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.			
MANILA	14	0248	0256	N25	E62		1-	2	0251	.20	.20			
MANILA	14	0330	0342	N25	E61		1-	2	0333	.40	.40			
ONDREJOV	14	0402	0429	N25	E65	27 D	1-	3	0412			2.00		
CATANIA	14	0818	0855	N07	W00	37 D	1		0820					
CATANIA	14	0930	0948	N07	W00	18 D	1		0930					
	14	1155	1200	PATROL										
	14	1320	1325	PATROL										
CAPRI-S	14	1335	1349	N28	E56		1-	3	1339	.80	1.60			
SAC PEAK	14	2230	2325	N26	E53		1-	C		.45	.63		18	
LOCKHEED	14	2238	2310	N25	F52		1-	2	2250	.30	.40		10	
LOCKHEED	14	2353	2400	N10	E52		1-	2	2356	.30	.40		10	
	15	0145	0215	PATROL										
MANILA	15	0248	0255	N25	E50		1-	1	0249	.33	.33			
MANILA	15	0256	0309	N25	E50		1-	2	0259	.17	.17			
BUCHAREST	15	0640	0711	N26	E47	31 D	1	2		2.50				
HTE-PROVEN	15	0642	0710	N27	E50		1-		0655	1.00	1.70			
CATANIA	15	0648	0725	N26	E47	37 D	1	2	0650					
MANILA	15	0652	0713	N25	E48		1-		0655	.33	.33			
CATANIA	15	1040	1045	N07	W20		1-	2	1042					
CATANIA	15	1145	1148	N26	E47	3 D	1		1144					
	15	1200	1210	PATROL										
CAPRI-S	15	1257	1434	N26	E46	97	1+	2	1333	1.80	3.10			
SAC PEAK	15	1317	1348	N27	E46		1-	C		1.40	1.90		28	
CAPRI-S	15	1446	1550	N26	E46	64	1+	2	1455	1.40	2.40			
SAC PEAK	15	1450	1510	N27	E43		1-	C		.59	.74		24	
HTE-PROVEN	15	1450	1525	N26	E45		1-		1458	.90	1.40			
ZURICH	15	1453	1505	N26	E43	12	1-	V	1458					
HTE-PROVEN	15	1611	1629	N27	E45		1-		1619	.70	1.10			
HTE-PROVEN	15	1702	1738	N26	E42		1-							
	15	1805	1815	PATROL			1-							
	15	1955	2015	PATROL										
	15	2040	2400	PATROL										
	16	0000	0025	PATROL										
MANILA	16	0119	0128	N24	E40		1-	2	0121	.13	.13			
MANILA	16	0220	0230	N26	E34		1-	2	0222	.17	.17			
MANILA	16	0337	0340	N26	E34		1-	1	0338	.17	.17			
	16	0505	0510	PATROL										
MANILA	16	0505	0510	N24	E38	54 D	1-	1	0507	.20	.20			
HTE-PROVEN	16	0510	0604	N27	E35		1-	2	0516	1.60	2.20			
MANILA	16	0536	0542	N26	E33		1-	2	0538	.13	.13			
HTE-PROVEN	16	0700	0745	N27	F34		1-		0712	.60	.80			
ARCETRI	16	0905	0920	N27	E30		1-	3	0912	.39	.52			
MANILA	16	1845	1915	N27	E28		1-	1	1853	.60	.80			
MC MATH	16	1900	1915	N25	E27		1-	C	1853	.87	.92		17	
SAC PEAK	16	2145	2220	PATROL			1-							
MC MATH	16	2153	2235	N27	E25		1-	2	2205	1.00	1.20			
	17	0505	0530	PATROL			1-	C	1224	.42	.44			
OTTAWA	17	1222	1230	N27	E20									

FORMER - STANDARDS - BOULDER

SOLAR FLARES

JUNE 1964

OBSERVATORY	DATE JUNE 1964	OBSERVED UNIVERSAL TIME	LOCATION	DATA DURATION MINUTES	IN FOR TRACE	GRS COND.	TIME U T	MEASUREMENTS AREA Sq Deg	CONR AREA Sq Deg	MAX WIDTH H ₀	MAX INT °	PROVISIONAL IONOSPHERIC EFFECT
— SAC PEAK — RTE-PROVEN	17 1223	1230	1224	N26 E21	1—	C	1228	.29 .30	.30 .40		18	
	17 1227	1230	1228	N27 E20	1—							
	17 2145	2200	NO FLARE	PATROL								
	17 2210	2220	NO FLARE	PATROL								
	19 0450	0515	NO FLARE	PATROL								
	19 0550	0605	NO FLARE	PATROL								
	20 0430	0440	NO FLARE	PATROL								
	20 0510	0515	NO FLARE	PATROL								
— CATANIA	20 0800	0845	D	N28 W05	1—		0810		3.00			
— WENDEL	20 0842	0912	D	N26 W06	10 D							
— WENDEL	20 0855	0908	D	N26 W15	10 D							
— CATANIA	20 0852	0937	D	N05 W71	59 D		0855		4.00			
	20 0854	0915	D	N07 W73	7357							
	20 1200	1210	NO FLARE	PATROL	21 D							
LOCKHEED	21 0010	0045	0030	N06 W80	1—	2	0030	.20	.60		10	
LOCKHEED	21 0114	0138	0120	N06 W80	1—	2	0120	.50	.60		10	
CAPRI-S	21 0315	0335	NO FLARE	PATROL								
CAPRI-S	21 1247	1258	D	S01 W90	1—	3	0710	.60	.60			
LOCKHEED	21 1945	2006	1955	S00 W70	1—	3	1254	.50	.50		10	
— MANILA	21 2330	2400	2341	N32 W71	30 D	2	1255	.20	.30			
— LOCKHEED	21 2334	0030	2341	N25 W38	56	2	2341	2.10	2.52		20	
— SAC PEAK	21 2334	2340	2340	N26 W39	15	2	2340	2.60	3.27		20	
— SAC PEAK	21 2335	2340	2340	N26 W39	15	2	2340	2.60	3.27		20	
SAC PEAK	21 2356	2359	2358	N28 W39	3 D	2	2340	2.68	3.47		20	
	22 0245	0300	NO FLARE	PATROL	1—	3	0746	.50	.80			
	22 0410	0455	NO FLARE	PATROL	1—	3	0756	.50	.40			
CAPRI-S	22 0530	0550	NO FLARE	PATROL								
CAPRI-S	22 0742	0751	NO FLARE	N26 W42	1—	3						
	22 0754	0759	NO FLARE	N27 W41	1—	3						
LOCKHEED	22 2205	2210	NO FLARE	PATROL	1—	2	2127	.20	.20		10	
LOCKHEED	22 2124	2234	2217	N27 W43	1—	2	2127	.20	.20		10	
LOCKHEED	22 2212	2225	2216	N27 W43	1—	2	2218	.20	.20		10	
	22 2309	2325	2314	N27 W43	1—	2	2314	.20	.20		10	
	23 0310	0430	NO FLARE	PATROL								
	23 0455	0505	NO FLARE	PATROL								
	24 0245	0335	NO FLARE	PATROL								
	24 0400	0500	NO FLARE	PATROL								
	25 0150	0400	NO FLARE	PATROL								
	25 0405	0430	NO FLARE	PATROL								
	25 0445	0505	NO FLARE	PATROL								
LOCKHEED	27 1730	1758	1745	S60 E34	1—	2	1745	.20	.40		10	
LOCKHEED	27 2118	2127	2122	N75 E70	1—	2	2122	.20	.60		10	
LOCKHEED	27 2200	2214	2206	S40 E59	1—	2	2206	.30	.50		10	

COMET PCE - STRASMAN - BOULDER

SOLAR FLARES

JUNE 1961

OBSERVATORY	DATE JUNE 1961	OBSERVED UNIVERSAL TIME		LOCATION		DURA TION — MINUTES	IM- POR- TANCE	OBS COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX LAT.	APPROX MER. DIST.	NAHATH PEAK REGION			TIME U T	MEAS AREA Sq Deg	CORR AREA Sq Deg	MAX WIDTH R _g	MAX INT %
LOCKHEED	28	1915	1955	N57 E36			1-	2	1936	•20	•30		10
LOCKHEED	28	2130	2230	S05 E76			1-	2	2150	•30	•70		10
LOCKHEED	28	2240	2310	S05 E76			1-	2	2250	•30	•70		10
LOCKHEED	28	2320	2335	S05 E76			1-	2	2325	•30	•70		10
LOCKHEED	28	2355	0105 D	S05 E76			1-	2	0005	•30	•70		10
LOCKHEED	28		0045	S05 E76									
	29	0105	0540	NO FLARE	PATROL								
	30	0215	0530	NO FLARE	PATROL								

COARSE PCE - STANDARDS - BOULDER

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH,
BAKOU	PIRCULI, USSR	IKOMASAN	KYOTO, JAPAN		NETHERLANDS
CAPE TOWN	ROYAL OBSERVATORY,	KIEV KO	KIEV GAO, USSR	NIZMIR	KRASNOYA PAKHRA, USSR
CAPRI F	CAPE OF GOOD HOPE	KIEV KY	KIEV UNIVERSITY, USSR	SAC PEAK	SACRAMENTO PEAK, N. MEX. USA
CAPRI S	CAPRI, ITALY (GERMAN)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJÖBÄDEN	STOCKHOLM, SWEDEN
CRIMEE	CAPRI, ITALY (SWEDISH)	MCNATH	MCNATH-HULBERT	SCHAUINS	SCHAUINSLAND, GFR
HERSTMONCEU	SIMEIZ, USSR	MOSCOW	PONTIAC, MICH., USA	TASHKENT	TASHKENT, USSR
	ROYAL GREENWICH OBSERVATORY,		MOSCOW-GAISH, USSR	WENDEL	WENDELSTEIN, GFR
	HERSTMONCEUX, ENGLAND				
HTE-PROVEN	HAUTE-PROVENCE		NEW SCHAUIN FREIBURG, GFR		

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

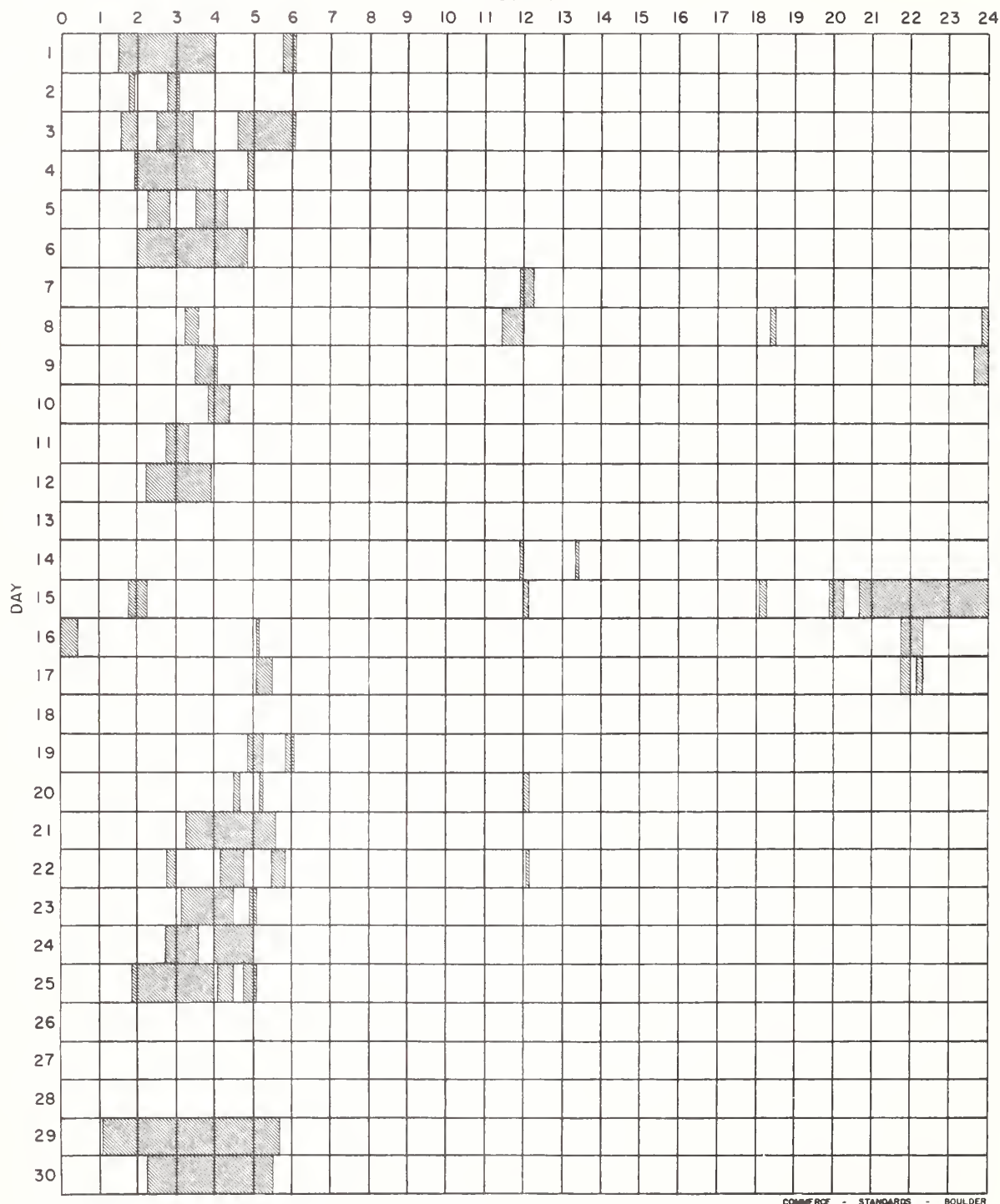
SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

INTERVALS OF NO FLARE PATROL OBSERVATIONS (PROVISIONAL)

JUNE 1964

HOUR-UT



COMMERCE - STANDARDS - BOULDER

Observatories included:

Arctetri	Haute-Provence	Lockheed	Sacramento Peak
Athènes	Huancayo	Manila	Wendelstein
Bucharest	Istanbul	Ondrejov	Wroclaw
Catania	Locarno	Ottawa	Zurich

SOLAR FLARES

MARCH 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURATION MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG. DIST.				MEAS. AREA Sq. Deg.	CORE AREA Sq. Deg.	MAX WIDTH Ha	
IRKUTSK	MAR 1964											
	01	0330	0335									
	02	0610	0620									
	02	2235	2300									
	03	2220	2335									
	04	0010	0040									
	04	0120	0200									
	04	0254 E	0312			18 D	1		2.25		1.60	
	04	1005	1035									
	04	1100	1120									
NIZAMIAH NIZAMIAH	04	1125	1200									
	04	1600	1630									
	07	0120	0150									
	07	2240	2300									
	08	0040	0200									
	11	0506	0518			12	1	2	1.82	2.78	1.50	
	11	1039	1045			6	1	2	1.82	2.78	1.40	
	12	0057	0105									
	12	0230	0245									
	12	0240	0258									
IRKUTSK SYDNEY	12	0243	0336									
	12	0313 E	0344									
	12	0408	0420									
	12	0426	0440									
	12	1412 E	1420 D									
	12	1512	1521 D									
	13	0055	0100									
	13	0150	0155									
	13	0205	0225									
	13	0409	0417									
THESSALONIK CLIMAX	13	0441	0445									
	13	0445	0503									
	13	0454	0511									
	13	0747	0756									
	14	0105	0350									
	15	0745	0810									
	15	0900	0905									
	15	0925	0935									
	15	0940	0945									
	16	0201 E	0222									
IRKUTSK SYDNEY	16	0359	0409									
	16	0201 E	0222									
	16	0359	0409									
	16	0201 E	0222									
	16	0359	0409									
	16	0201 E	0222									
	16	0359	0409									
	16	0201 E	0222									
	16	0359	0409									
	16	0201 E	0222									
	16	0359	0409									

COMMENTS - STANDARDS - BOULDER

SOLAR FLARES

MARCH 1961

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURATION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS			MAX WIDTH Ha	MAX INT %	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MATH. PLAGE REGION	MER DIST					MEAS AREA Sq. Deg	CORR AREA Sq. Deg				
IRKUTSK KODAIKNL CAPETOWN CAPETOWN CAPETOWN CLIMAX	MAR 16 1964	0431	0456		7182		25	1			1.86		1.51	100	S-SWF	
	16	0447 E	0452	N05 W68				1-	V	0447			1.60			
	16	0717	0730	N04 W67				1-	C	0719	.50	1.60				
	16	0811	0852	N05 W70	7182		41	1-	C	0816	.80	2.60				
	16	1132	1151	N07 W75				1-	C	1137	.30					
	16	1212	1227	N05 W70				1-	C	1214	.80	2.60				
SYDNEY NIZAMIAH	16	1555 E	1656	N05 W75	7182		61 D	1		1608	1.50	3.20			SI-S-SWF	
	18	0019	0030	N10 E60	7187		11	1	C	0025	1.00	2.30				
	20	0951	1101	N09 E29	7187		70	1	2	1056	1.82	2.18	1.50			
ABASTUMANI	21	0710	0720					1-								
	21	0725	0830	NO FLARE	PATROL											
	22	0420	0500	NO FLARE	PATROL											
	22	0542	0555	0549	N10 W20				C	0549	1.80	1.00		65		
	22	1140	1150	NO FLARE	PATROL											
	22	1200	1215	NO FLARE	PATROL											
CLIMAX NIZAMIAH CLIMAX	22	1215	1225	NO FLARE	PATROL											
	22	1300	1310	NO FLARE	PATROL											
	22	1521	1532	1523	N10 W30			1-	3	1523	.20	.20				
	22	1601	1614	1605	N10 W28			1-	3	1605	.40	.40				
	22	1839	1851	1843	N10 W29			1-	3	1843	.60	.70				
	22	2200	2230	NO FLARE	PATROL			1-	P	2358	1.00	1.60				
SYDNEY SYDNEY SYDNEY SYDNEY NIZAMIAH THESSALONIK CLIMAX	22	2354	0004 D	N12 E46												
	23	0018 E	0045	N12 E45				1-	P	0018	.80	1.30				
	23	0445	0451	N09 W38							.40	.50				
	23	0445	0452	N10 W40				1-		0447	.60	.80				
	23	0445	0520	N08 W40					C		.60	.80				
	23	0948 E	1000	N12 W39	7189		12	1	C	0952	1.82	2.48	1.50			
NIZAMIAH SYDNEY CAPETOWN BUCHAREST BUCHAREST	23	1034 E	1038 D	N07 W34				1-	G							
	23	1441	1444	N14 W45				1-	3	1442	.40	.50				
	24	0504	0510	N11 W53	7189		6	1	2	0506	1.22	2.16	1.60			
	24	0523	0530	N05 W48				1-	C	0526	.10	.20				
	24	0809	0857	N09 E52				1-	C	0817	1.10	1.90				
	24	0812 E	0913 D	N08 E48	7192		61 D	1+	2							
CAPETOWN	24	0834 E	0837 D	N08 W25				1-	2							
	24	2120	2200	NO FLARE	PATROL											
	25	0703	0737	N08 E39	7192		34	1	C	0708	2.00	2.60				
CAPETOWN	25	1730	1735	NO FLARE	PATROL											
	26	0610	0635	NO FLARE	PATROL											
	27	0200	0225	NO FLARE	PATROL											
	28	0110	0145	NO FLARE	PATROL			1-	C	1420	.20					
28	1406	1433	1420	N14 W88												

COMMENTS - STANDARDS - BOUNDED

SOLAR FLARES

MARCH 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		McMATH PLACE REGION	DURATION MINUTES	OBS. COND.	MEASUREMENTS				PROVISIONAL LONGSPHERIC EFFECT
		START	END	APPROX LAT.	APPROX LONG. DIST.				TIME U.T.	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha	MAX. INT. "
	MAR 1964												
	29	0430	0500										
	29	0510	0525										
	31	1915	1925										
	31	2005	2055										
	31	2110	2130										
	31	2205	2330										

COMMERCE - STANDARDS - BOULDER

These flare reports are addenda to the March 1964 flares published in CRPL-F 236 for April 1964.

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH,
BAKOU	PIRCULI, USSR	IKOMASAN	KYOTO, JAPAN		NETHERLANDS
CAPETOWN	ROYAL OBSERVATORY,	KIEV KO	KYIV CAO, USSR	NIZMIR	KRASNAYA PAKHRA, USSR
	CAPE OF GOOD HOPE	KIEV KY	KIEV UNIVERSITY, USSR	SAC PEAK	SACRAMENTO PEAK, N.MEX. USA
CAPRI F	CAPRI, ITALY (GERMAN)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJÖBADEN	STOCKHOLM, SWEDEN
CAPRI S	CAPRI, ITALY (SWEDISH)	MCNATH	MCNATH-HULBERT	SCHAUNINS	SCHAUTINSLAND, CFR
CRIMÉE	SIMEIZ, USSR	MOSCOW	PONTIAC, MICH., USA	TACHKENT	TASHKENT, USSR
HERSTHONCEU	ROYAL GREENWICH OBSERVATORY,		MOSCOW-CAISH, USSR	WENDEL	WENDELSTEIN, CFR
	HERSTHONCEUX, ENGLAND				
HTE-PROVEN	HAUTE-PROVENCE		NEW SCHAUN FREIBURG, CFR		

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

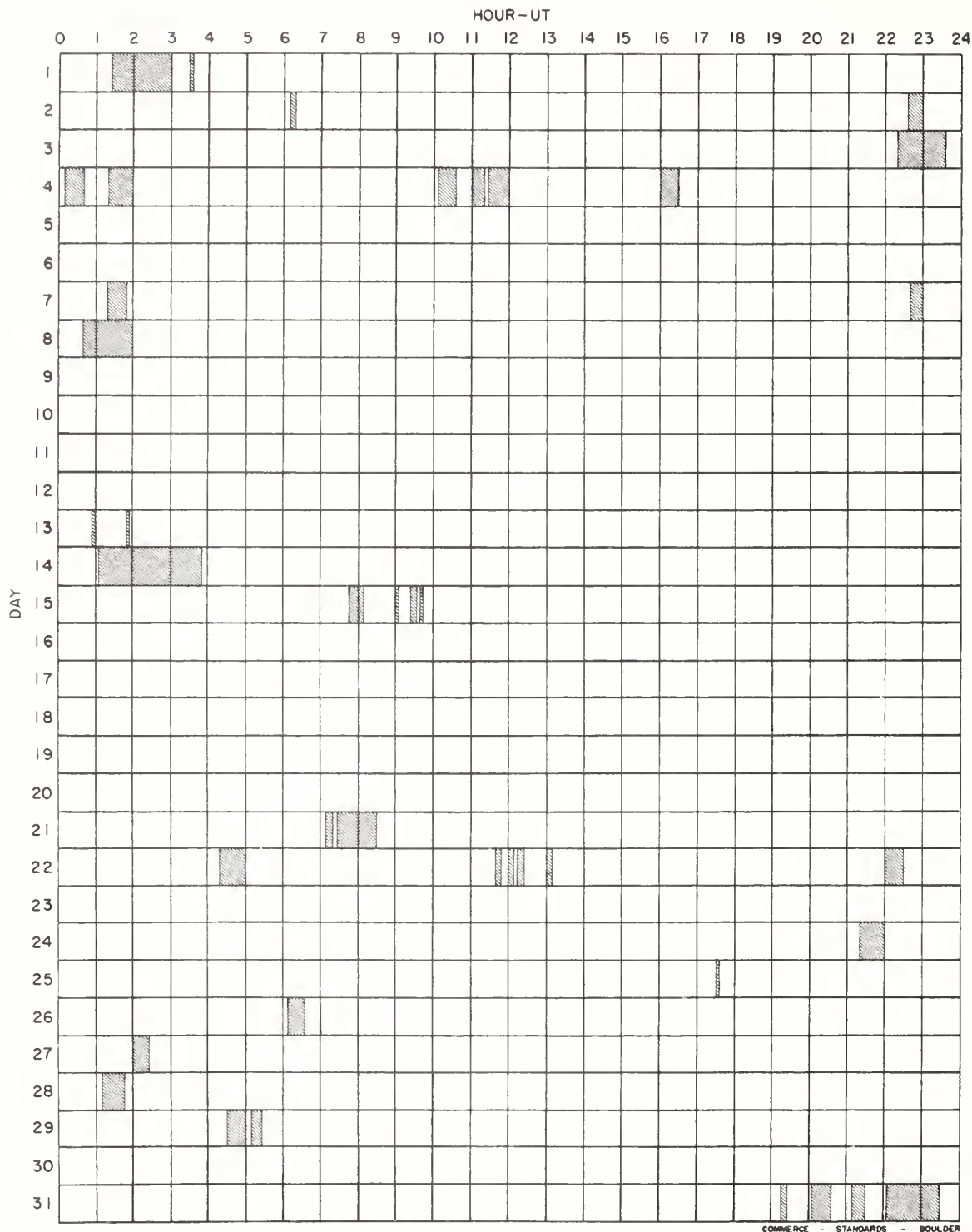
SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

Erratum: In CRPL-F 238B page IIIa, the coordinates for the flare reported by Ottawa for May 7, 1964 which began at 1428 and ended at 1439 UT at S01 and E31 should read S01 and W31. The McMATH plage region number is 7269.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

MARCH 1964



Observatories include:

Abastumani
Arcetri
Arosa
Bucharest
Capetown
Capri-F (German)

Capri-S (Swedish)
Climax
Crimee
Dunsink
Haute-Provence
Herstmonceux

Huancayo
Ikomasan
Irkutsk
Istanbul
Izmiran
Kiev-KO

Kodaikanal
Locarno
Lockheed
Manila
McMath-Hulbert
Mitaka

Nizamiyah
Ondrejov
Ottawa
Sacramento Peak
Sydney
Tachkent

Thessaloniki
Uccle
Voroshilov
Wendelstein
Wroclaw
Zurich

IONOSPHERIC EFFECTS OF SOLAR FLARES

IIIk

SHORT WAVE RADIO FADEOUTS SUDDEN PHASE ANOMALIES
 SUDDEN COSMIC NOISE ABSORPTION SUDDEN ENHANCEMENTS OF SIGNAL
 SUDDEN ENHANCEMENTS OF ATMOSPHERICS SUDDEN FREQUENCY DEVIATIONS
 SOLAR NOISE BURSTS AT 18 Mc/s

MAY 1964

MAY 1964	UNIVERSAL TIME			TYPE SWF IMP	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX		ABS	SCNA	SEA	SPA	SES	SFD				
24	1932	1935	1932D							04		1	BO(WWV10-0.4,WWV15-0.2)	

COMMERCE - STANDARDS - BOULDER

Addendum

On March 17, 1962 a short wave fadeout should be added to the events published in CRPL-F 213 B issued May 1962.

Mar. 1962	Start	End	Max	Type SWF IMP	Wide spread index	Stations
17	0330	0355U	0335	SL 1+	1	OK
17	0355U	0530	0410	S 2+	5	OK,CW+

RIOMETER EVENTS

(Provisional)

MAY 1964

South Pole

26 Mc/s

MAY 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS	MAY 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS
1	0800	2011	1227	47	1	18	2047	2108	2105	4	3
2	0059	0430	0353	6	2	19	0405	1608	0417	7	3
2	0654	1708	0818	21	3	20	0207	0417	0149	11	3
2	2153	0514	0039	30	5	20	1646	2134	1700	4	5
3	0942	1857	1413	8	2	21	0406	0421	0411	3	1
4	0144	0233	0206	22	2	21	1007	1716	1213	12	2
4	1007	1151	1042	4	3	22	1321	1815	1700	3	2
5	0021	0223	0038	17	3	23	0343	0442	0408	8	1
5	0547	2347	1204	7	12	23	0529	0610	0540	3	1
6	0210	0355	0324	5	5	23	2234	0010	2326	5	2
7	0331	0458	0426	6	3	24	0406	1528	0417	11	5
7	0826	0850	0844	3	2	24	2035	0134	2231	46	2
8	*					25	0924	1331	0951	88	1
9	1409	1545	1429	3	3	25	1548	1643	1552	4	1
10	0426	0504	0445	3	2	25	2017	0600	2350	68	4
10	1234	1700	1346	6	2	26	1159	**	1314	3	17
11	2358	0008	0001	5	1	27	**	1625	0712	31	4
12	2004	2105	2037	5	2	27	2217	2316	2235	10	2
13	1514	1817	1701	7	1	28	0248	0531	0308	20	2
14	0914	1433	0926	13	3	28	0945	1434	1301	4	7
15	0342	1737	0402	85	2	28	2211	2303	2217	18	2
15	2339	0635	2347	96	3	29	0316	0644	0322	15	2
16	0830	2110	1508	30	4	29	1115	1640	1345	7	1
17	0638	1838	1549	26	3	30	0016	0354	0028	15	3
18	1001	1757	1306	10	5	30	0655	1732	1148	7	2
						30	2244	0053	2254	47	1
						31	1002	1613	1428	4	11

COMMERCE - STANDARDS - BOULDER

* No Data

** No Event

*** Uncertain

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVa

JUNE 1964

ARO - OTTAWA

2800 Mc/s

JUNE 1964	U R A N E	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM		REMARKS
						TIME	FLUX	
16	1	Simple 1 f	1757	1.5	1757.1	2.7	0.7	

COMMERCE - STANDARDS - BOULDER

HOURS OF OBSERVATION, APRIL, MAY, JUNE, 1964

OBSERVING PERIOD:

April	11:10 - 23:05 UT
May	10:55 - 23:20 UT
June	10:55 - 23:25 UT

With the following exceptions:

- (1) Observations commenced: Apr. 20 at 13:25 UT
 May 5 at 12:20 UT
 9 at 14:10 UT
 10 at 12:15 UT
 June 6 at 12:25 UT
 12 at 12:25 UT

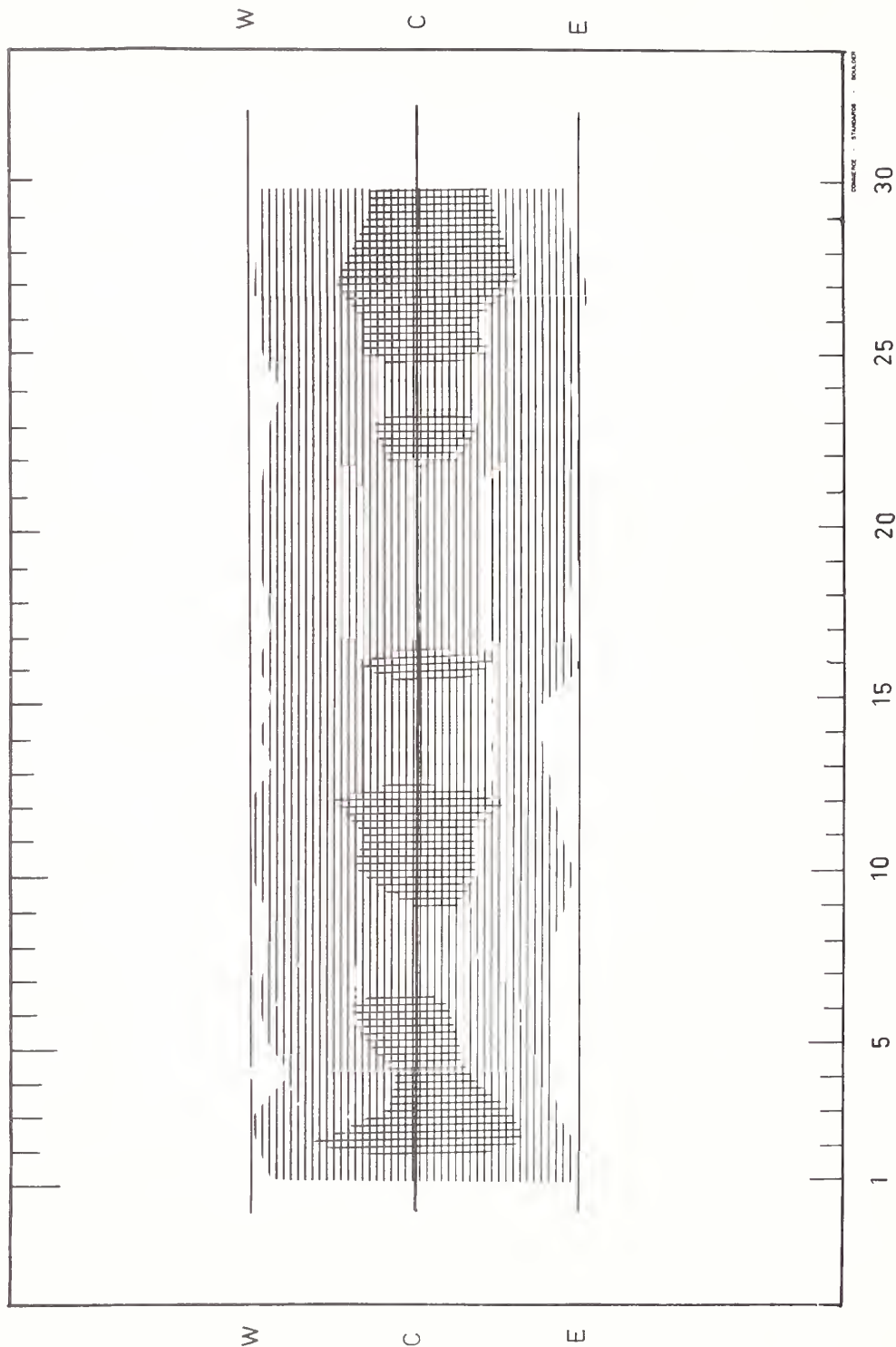
- (2) Interruption of observations, approximately 20 minutes in duration,
 for calibration purposes:
 Daily - In the period 20:00 - 21:00 UT
 Apr. 1-26, inclusive - In the period 16:00 - 17:00 UT
 Apr. 28 - June 11, inclusive - In the period 15:00 - 16:00 UT
 June 12 - 30, inclusive - In the periods 14:00 - 15:00 UT and
 17:00 - 18:00 UT

- (3) No observations: Apr. 21 18:30 - 19:50 UT
 27 14:10 - 14:35 UT
 May 9 21:10 - 22:30 UT
 June 24 14:45 - 15:45 and 17:55 - 18:20 UT

- (4) Interference obscuring portions of the records on:
 Apr. 22
 May 4, 6, 11, 28
 June 5, 8, 9, 10, 19, 23, 25, 26, 30.

NANÇAY

169 Mc/s



JUNE 1964

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVc

JUNE 1964

NBS BOULDER

108 Mc/s

1964 June	TYPE	START UT	TIME OF MAXIMUM UT	DURATION MINUTES	INTENSITY
7	8	1629.5	1630.0	3.8	3

COMMERCE - STANDARDS - BOULDER

NOMINAL TIMES OF OBSERVATION

JUNE 1964

NBS BOULDER

108 Mc/s

1964 June	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.	1964 June	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.
1	1138-0200		16	1136-1540	
2	1138-0201	2320-0010;	17	2135-0208	
		0100-0150	18	1601-1650;	
3	1138-0201	0038-0042		1745-2000;	
4	1512-0202			2356-0208	
5	1137-0202		19	1136-2101;	
				2117-0209	
6	1137-0203	2005-2100	20	1136-0209	1810-1812;
7	1136-0204				1817-1820;
8	1136-0204	1210-1325;			2312-0209
		1533-1539;			
		1600-1845	21	1136-0209	1617-1629;
9	1136-0205				0009-0209
10	1136-0205		22	1136-0209	
			23	1200-0210	1730-1828
11	1136-1745;		24	1137-0210	
	1800-0206		25	1137-0210	
12	1136-0206	2045-0206			
13	1135-0207	1135-1500;	26	1137-2049;	2356-0210
		1735-2330;		2118-0210	
		0128-0207	27	1138-0210	
14	1135-0207	1340-1640	28	1138-0210	1710-0146
15	1135-0207		29	1139-0210	1800-0210
			30	1139-1540;	2001-2308
				2001-0210	

COMMERCE - STANDARDS - BOULDER

Note: Most of the interference is due to atmospheric.

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1964

High Altitude Observatory
Boulder

7.6-41 Mc/s

Date June 1964	Bursts			Frequency Range (Mc/s)	Date June 1964	Bursts			Frequency Range (Mc/s)
	Type	Time (U.T.)	Intensity			Type	Time (U.T.)	Intensity	
10 Jun 13	III	2150-2150:30	1	12-36	15 Jun	III	2144:15-2145:15	1	16-41
	III	1535:30-1537:45	1+	12-41		III	2147-2148:30	1+	13-41
15	III	1539:15-1539:30	1-	18-30		III	2150-2150:30	1-	16-41
	III	1551-1551:45	2	8-41		III	2338:30-2338:45	1-	18-41
	III	1726:30-1726:45	1-	16-38		III	2340:45-2341	2	7-41
	III	1729:30-1729:45	1-	23-41	16	III	2342-2342:15	1-	11-41
	III	1800:15-1801:15	1+	7-41		III	2343-2343:15	1-	11-41
	III	1802-1802:15	1-	20-41		III	0007-0008	1-	14-41
	III	1833:15-1833:30	1	18-41		III	0045:30-0048:30	1-	14-41
	III	1906:15-1906:30	1-	18-41		III	0102-0103	1	15-41
	III	1907:15-1907:45	1	15-41		III	1240:45-1241	1-	16-41
	III	1923:15-1924:45	1	17-41		III	1345-1345:30	1-	18-41
	III	1942:45-1943	1-	18-39		III	1346-1346:30	1	18-41
	III	1950:15-1950:30	1-	18-36		III	d 1432:45-1433:15	2	11-41
	III	1957-1958	1	20-41		III	1818-1818:30	1-	18-41
21	III	2033:45-2034	1	20-41	21	III	1938:30-1938:45	1	17-41
	III	2037:15-2037:30	1-	25-39		III	1958:45-1959	1-	20-41
	III	2106:15-2106:45	1	16-41		III	2000:15-2001	1	16-41
	III	2108:15-2109	1+	7-41		No Observ.	1400-2311		
	III	2136:45-2137:15	1-	18-41					

d = harmonic structure

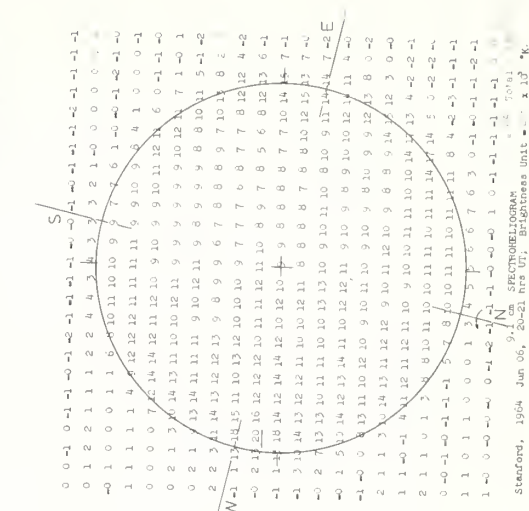
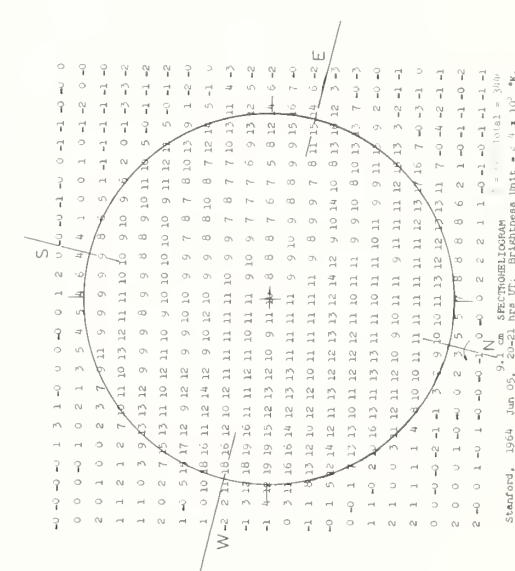
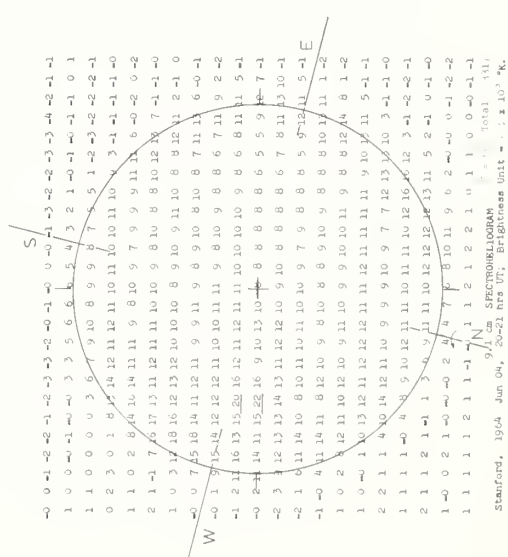
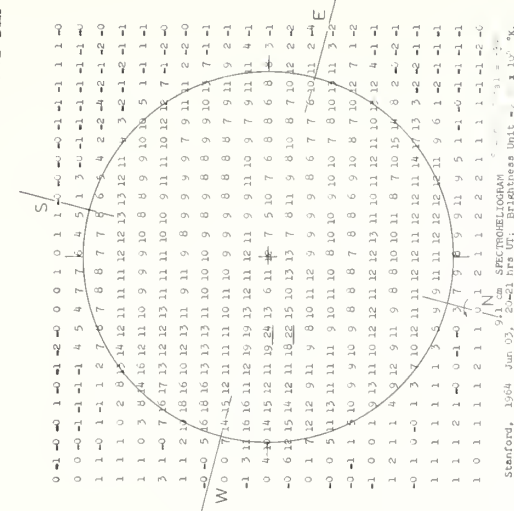
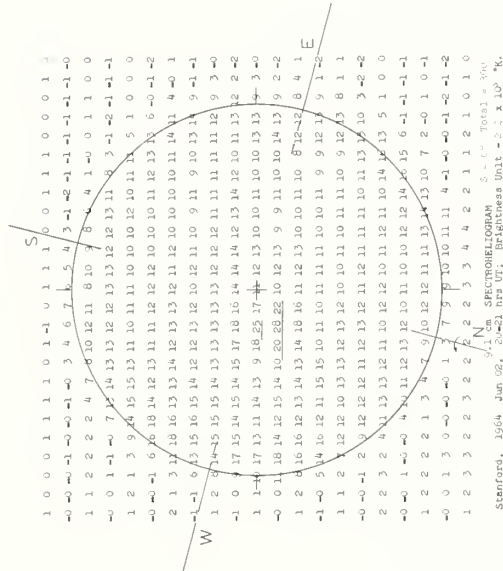
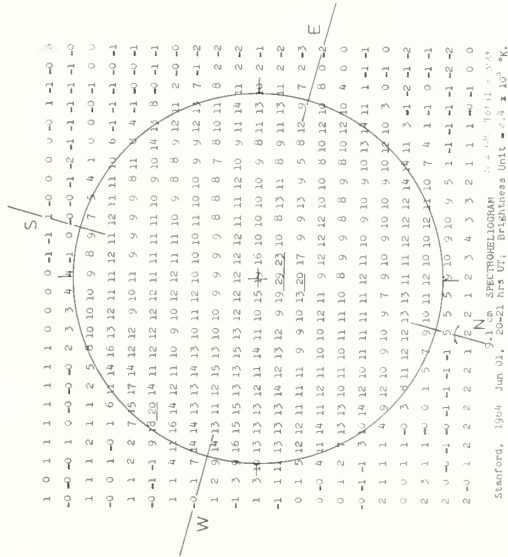
COSMENCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JUNE 1964

STANFORD

9.1 cm

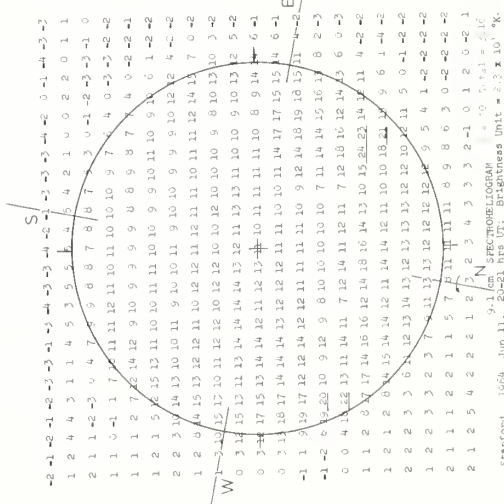
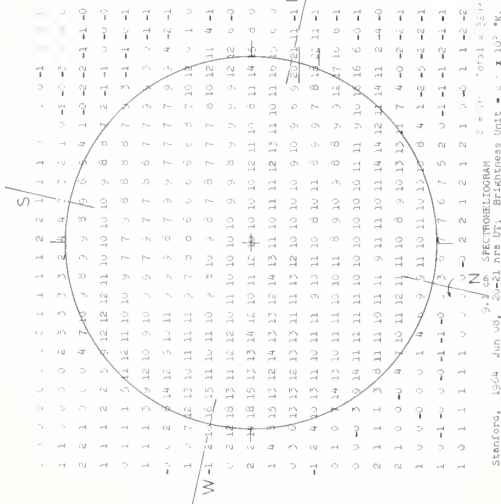
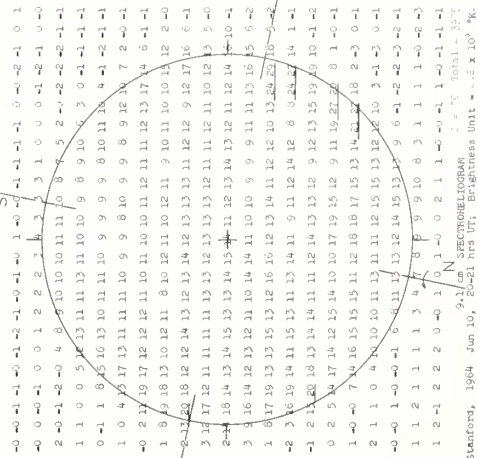
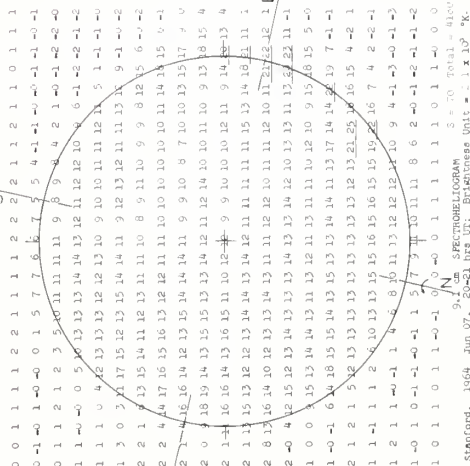


IVc

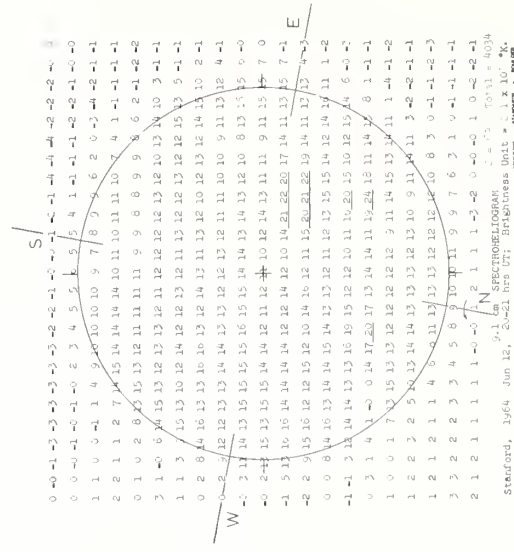
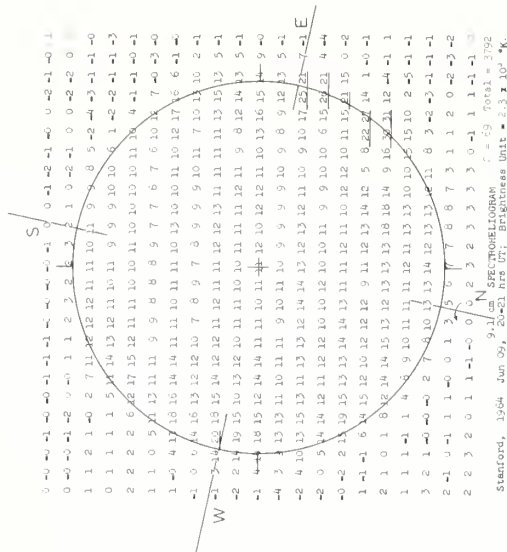
SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JUNE 1961

STANFORD



9.1 cm

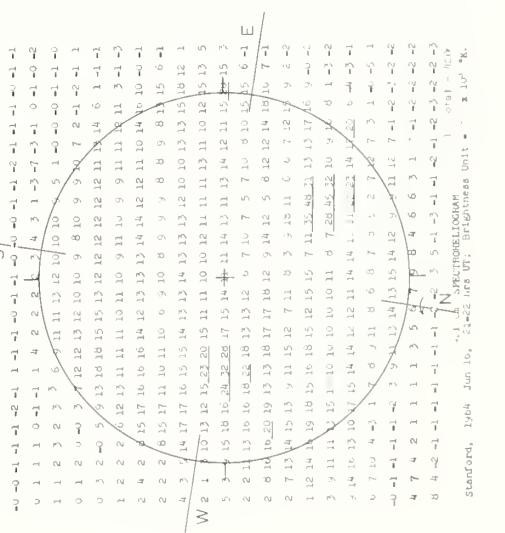
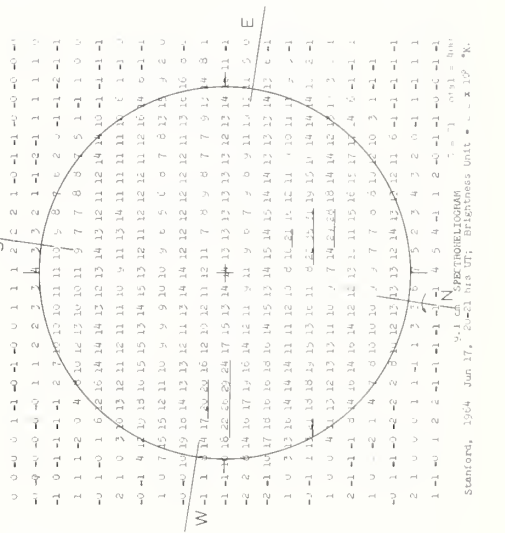
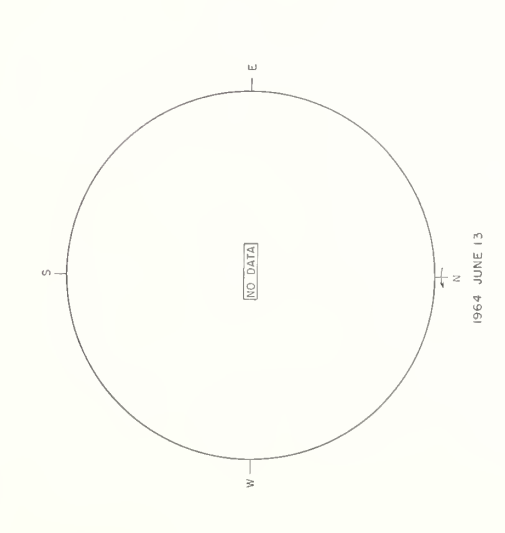
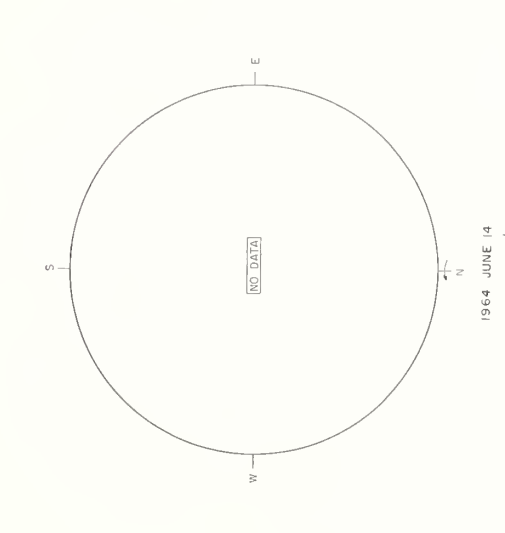
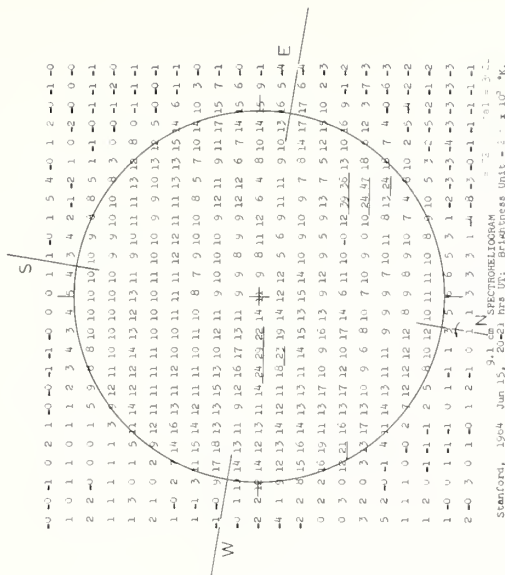


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JUNE 1964

STANFORD

9.1 cm

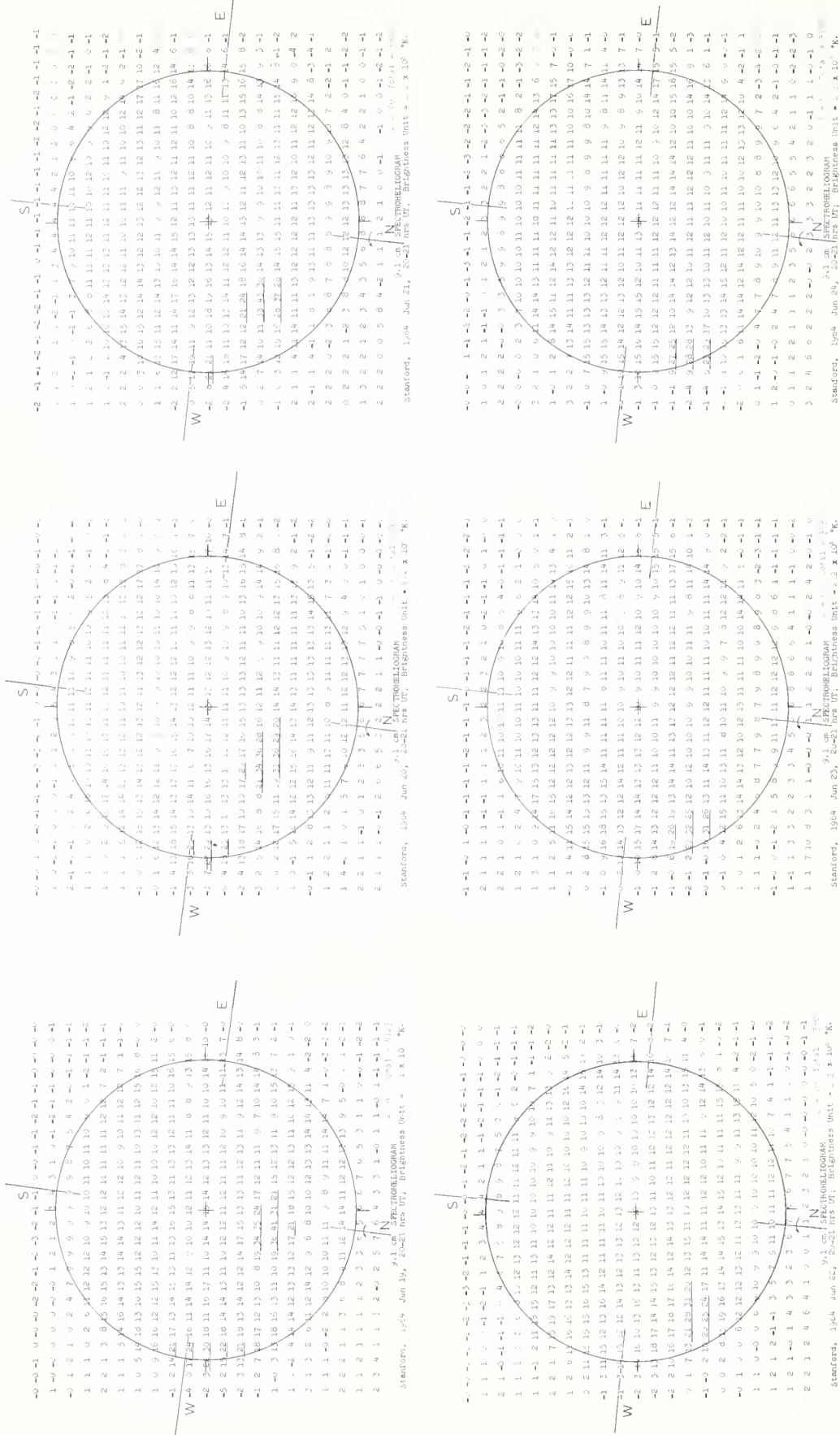


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JUNE 1964

STANFORD

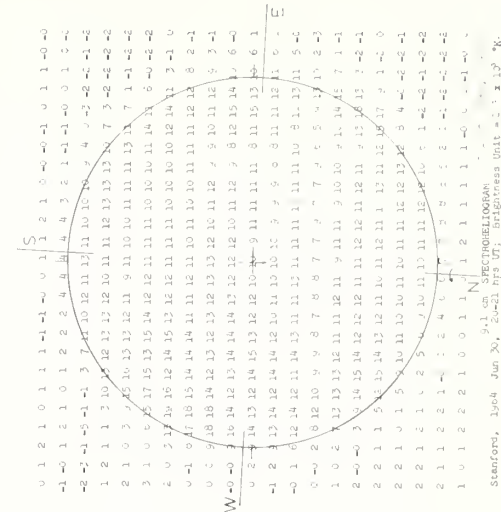
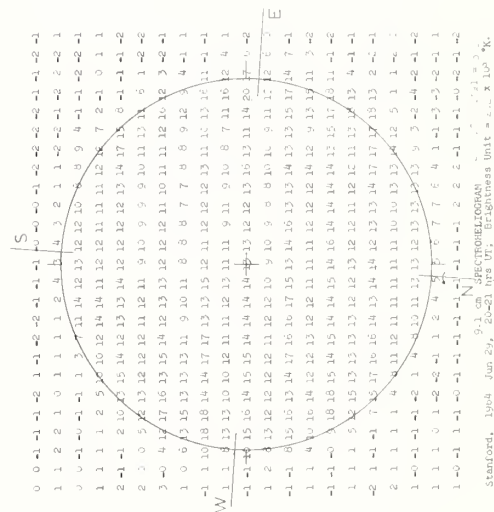
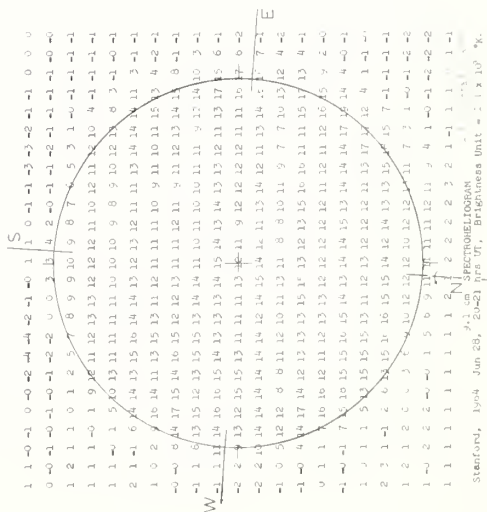
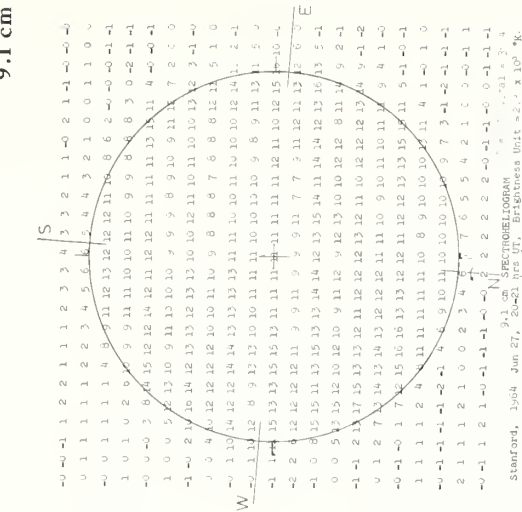
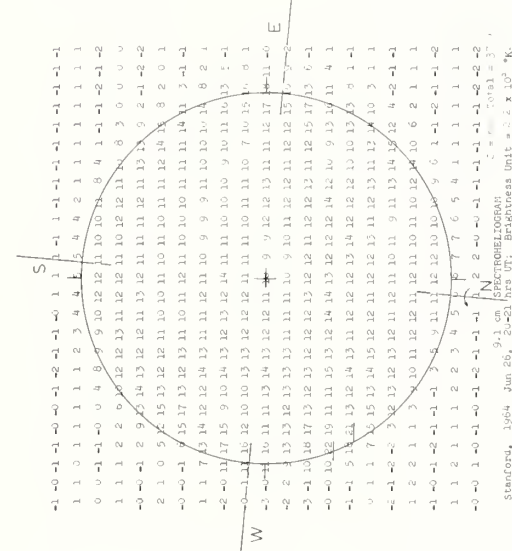
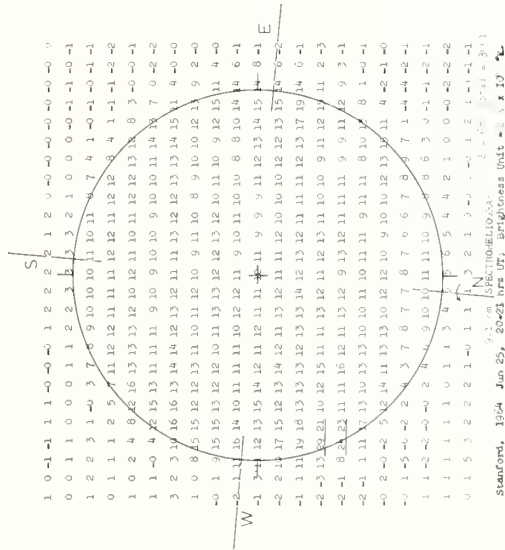
9.1 cm



SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JUNE 1964

STANFORD



COSMIC RAY INDICES
(Climax Neutron Monitor)
IGC Station B 305

MAY 1964

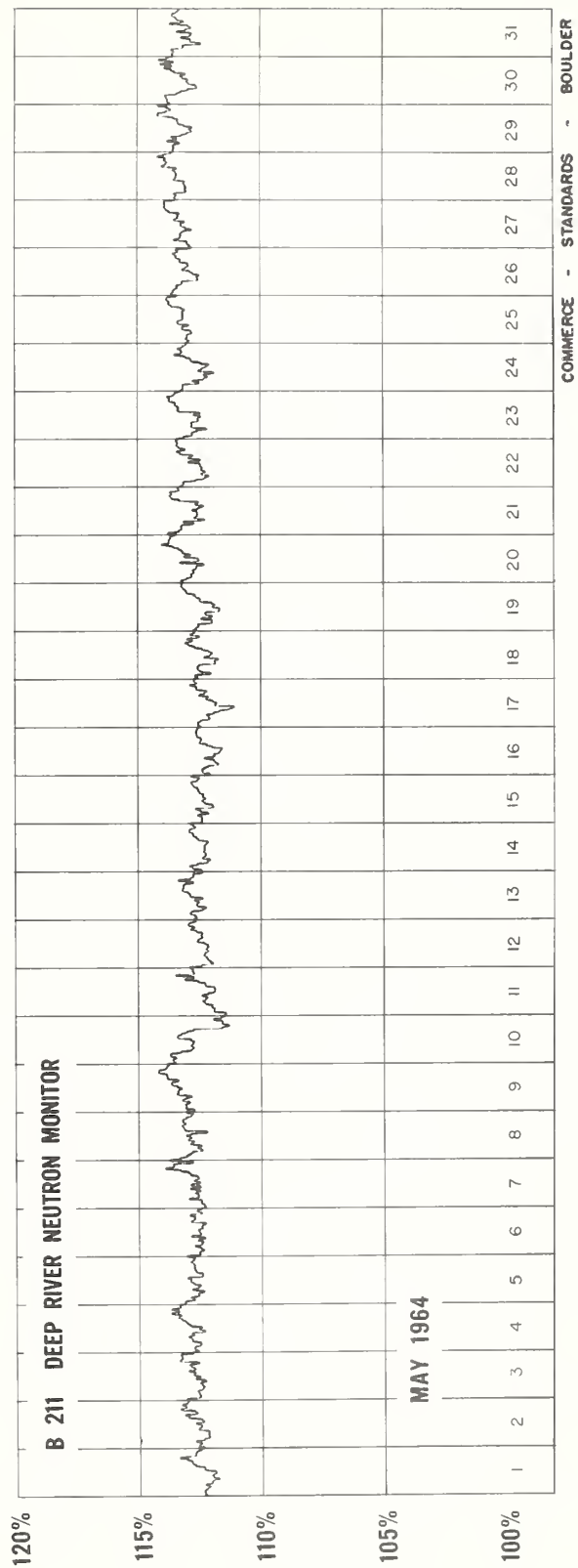
May 1964	DAILY AVERAGE COUNTS / HOUR *	May 1964	DAILY AVERAGE COUNTS / HOUR *
1	3729.6	16	3260.3
2	3288.2* *	17	3258.9
3	3294.0	18	3262.7* *
4	3287.3	19	3260.9
5	3289.1	20	3270.8
6	3287.8	21	3271.9
7	3287.5	22	3279.4
8	3285.1* *	23	3290.7
9	3289.2	24	3286.5
10	3274.3	25	3280.9* *
11	3284.9* *	26	3285.9
12	3260.4	27	3295.8
13	3266.2	28	3300.8* *
14	3259.2	29	3305.3
15	3262.7	30	3304.9
		31	3291.5* *

COMMERCE - STANDARDS - BOULDER

*Scaling Factor 128.

** No. of Section Hours Less Than 40

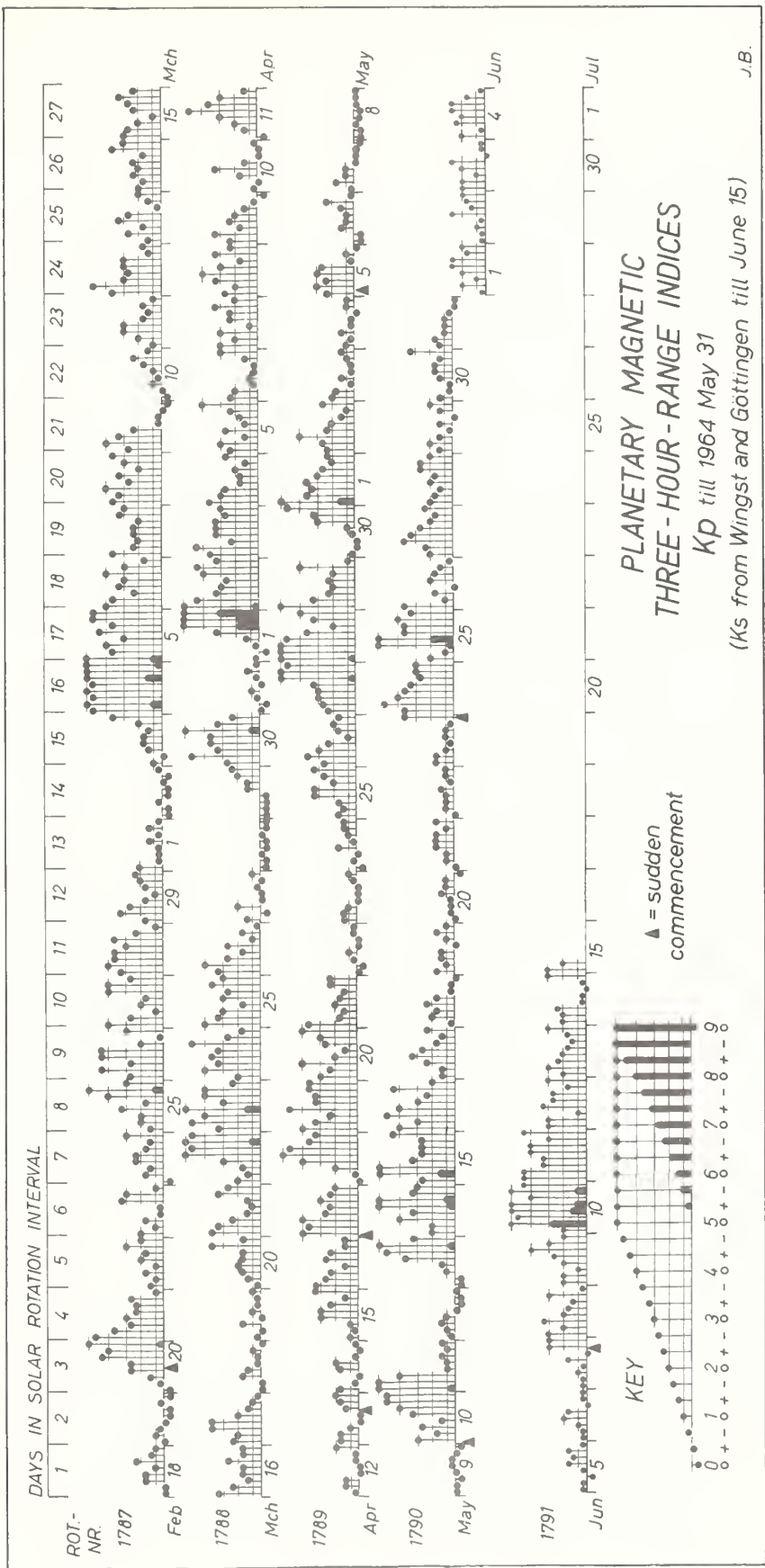
COSMIC RAY INDICES **(Pressure Corrected Hourly Totals)**



GEOMAGNETIC ACTIVITY INDICES

MAY 1964

May 1964	C	Values Kp								Sum	Ap	Final Selected Days
		Three hour Gr. interval										
		1	2	3	4	5	6	7	8			
1	1.3	6o	4-	3+	4-	3o	3-	2o	2+	27-	23	Five Quiet
2	0.6	2+	3-	4o	2+	2o	1+	1o	3-	18+	11	
3	0.3	2o	2-	1-	1+	1-	1-	1o	1+	9+	4	
4	0.0	1o	1-	1+	1-	1-	0+	1o	1o	7-	4	
5	0.6	2+	3o	2+	3o	3-	1-	1o	0+	15+	9	
6	0.2	0o	0o	1+	1o	1o	1+	2+	1-	8-	4	7
7	0.1	1-	2-	1o	1o	0+	0+	0+	0o	5+	3	8
8	0.0	0o	0o	0+	0o	0o	0+	0+	0+	1+	1	9
9	0.0	0+	0+	0o	0+	1-	1-	0+	0o	3-	2	12
10	1.2	3o	2-	3-	1+	3+	4o	5-	5-	25+	20	20
11	0.9	5+	5o	4o	1o	1o	1+	1o	1+	20o	19	Five Disturbed
12	0.0	1-	1o	1+	1o	0+	0o	0o	0+	5-	2	
13	1.1	0o	0o	1o	1+	4-	5-	5+	3+	19+	18	
14	1.2	2o	2o	4o	3+	5+	6-	3+	3o	29-	27	
15	1.3	3-	6o	5o	3+	3-	3-	3-	4+	29+	28	
16	1.2	4o	3o	5-	4o	3o	2+	4+	2o	27+	21	14
17	0.7	1+	1+	2+	3+	3-	2-	1+	2+	16+	9	15
18	0.3	1-	2o	2-	2+	2-	1-	1-	0+	10o	5	24
19	0.3	2-	1o	1+	1+	0+	1o	2-	1o	9+	4	25
20	0.2	0+	1-	1-	1-	1+	1o	1o	0o	6-	3	
21	0.3	0+	1o	1o	2-	2-	2-	1o	2-	10o	5	Ten Quiet
22	0.2	0+	1o	1o	1o	1+	1-	1o	1o	7+	4	
23	0.6	2-	2-	1o	1-	1o	1o	1-	4+	11+	6	
24	1.2	4-	5-	4o	4-	3+	3-	3o	3o	28o	21	
25	1.4	2o	1o	5+	6+	4-	4-	4o	3+	29+	31	
26	0.5	4-	1o	2-	0+	2o	2-	1+	1-	12+	7	7
27	0.8	2o	2+	4-	3+	3-	2o	2-	2+	20o	11	8
28	0.5	2o	2-	1+	2o	2-	3-	3-	2o	16o	8	9
29	0.3	1+	2o	1+	1-	1+	0+	1+	2o	10+	5	12
30	0.5	1+	1-	1-	1+	2-	2-	1+	3+	12o	6	19
31	0.1	1+	2-	1o	1o	1o	1-	0+	0+	7+	4	20
												22
												31
Mean:	0.58									Mean:	10	



CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

MAY 1964

NORTH ATLANTIC					NORTH PACIFIC									
MAY 1964	NORTH ATLANTIC 6-HOURLY QUALITY FIGURES				SHORT-TERM FORECASTS ISSUED ABOUT ONE HOUR IN ADVANCE OF:				WHOLE DAY INDEX		ADVANCE FORECASTS (J-REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY		GEOMAGNETIC K _{SY}	
	00 06 12 18 TO TO TO TO 06 12 18 24				00 06 12 18				00 06 12 18		1-7 1-7 1-7 DAYS DAYS DAYS FINAL J-24 SOW J-24		1-7 1-7 1-7 DAYS DAYS DAYS FINAL J-24 SOW J-24	
	00 06 12 18 TO TO TO TO 06 12 18 24				00 06 12 18				00 06 12 18		1-7 1-7 1-7 DAYS DAYS DAYS FINAL J-24 SOW J-24		1-7 1-7 1-7 DAYS DAYS DAYS FINAL J-24 SOW J-24	
01	4+ 2+ 5+ 6-	5 4 6 5	5 4 6 5	(4+)	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5
02	5+ 4- 6- 6+	5 4 6 6	5 4 6 6	5+	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5
03	6- 4+ 7- 7-	6 5 6 7	6 5 6 7	60	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
04	6- 5- 6+ 7-	6 5 7 7	6 5 7 7	6-	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
05	6- 5- 7- 7-	6 5 7 7	6 5 7 7	60	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
06	60 50 7- 7-	6 5 7 7	6 5 7 7	60	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
07	60 5+ 7- 7-	6 5 7 7	6 5 7 7	6+	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
08	6+ 6- 7- 7-	6 6 7 7	6 6 7 7	6+	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
09	60 6- 70 7-	6 6 7 7	6 6 7 7	6+	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
10	60 5+ 7- 6+	6 5 6 6	6 5 6 6	60	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7
11	5+ 3+ 60 6-	5 5 6 6	5 5 6 6	50	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7
12	6- 4+ 7- 6+	5 5 6 6	5 5 6 6	6-	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
13	60 5- 7- 6+	6 5 7 6	6 5 7 6	60	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5
14	6- 5- 6+ 6+	5 4 6 5	5 4 6 5	6-	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5
15	5+ 3+ 6+ 60	5 4 6 6	5 4 6 6	5+	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5
16	6- 3+ 6+ 60	5 4 6 6	5 4 6 6	5+	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5
17	6- 5- 6+ 6+	6 4 7 6	6 4 7 6	6-	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
18	60 5+ 7- 6+	6 5 7 6	6 5 7 6	60	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
19	60 50 6+ 7-	6 5 7 6	6 5 7 6	60	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7
20	60 5+ 7- 5+	6 5 7 7	6 5 7 7	60	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7
21	6- 6- 70 70	6 6 7 7	6 6 7 7	6+	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7
22	60 60 7- 7-	6 6 7 7	6 6 7 7	6+	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7
23	60 60 7- 6+	6 6 7 7	6 6 7 7	6+	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
24	6+ 5+ 6+ 60	5 5 6 6	5 5 6 6	60	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5	5 5 5
25	6+ 5- 6+ 6+	5 5 6 6	5 5 6 6	60	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
26	6- 5+ 7- 6+	6 5 7 6	6 5 7 6	60	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4
27	60 50 6+ 6+	6 6 6 6	6 6 6 6	6-	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4	4 4 4
28	6+ 50 6+ 70	5 5 7 7	5 5 7 7	60	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
29	60 5+ 7- 7-	6 5 7 7	6 5 7 7	60	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
30	6+ 60 7- 7-	6 5 7 7	6 5 7 7	6+	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
31	7- 6+ 70 7-	6 6 7 7	6 6 7 7	7-	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
Score: Quiet Periods					16	16	16	16	16	16	16	16	16	16
					7 5 8 5	7 5 8 5	7 5 8 5	7 5 8 5	7 5 8 5	7 5 8 5	7 5 8 5	7 5 8 5	7 5 8 5	7 5 8 5
					0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
					0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Disturbed Periods:					0 1 0 0	0 1 0 0	0 1 0 0	0 1 0 0	0 1 0 0	0 1 0 0	0 1 0 0	0 1 0 0	0 1 0 0	0 1 0 0
					1 4 0 0	1 4 0 0	1 4 0 0	1 4 0 0	1 4 0 0	1 4 0 0	1 4 0 0	1 4 0 0	1 4 0 0	1 4 0 0
					0 2 0 0	0 2 0 0	0 2 0 0	0 2 0 0	0 2 0 0	0 2 0 0	0 2 0 0	0 2 0 0	0 2 0 0	0 2 0 0
					0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0

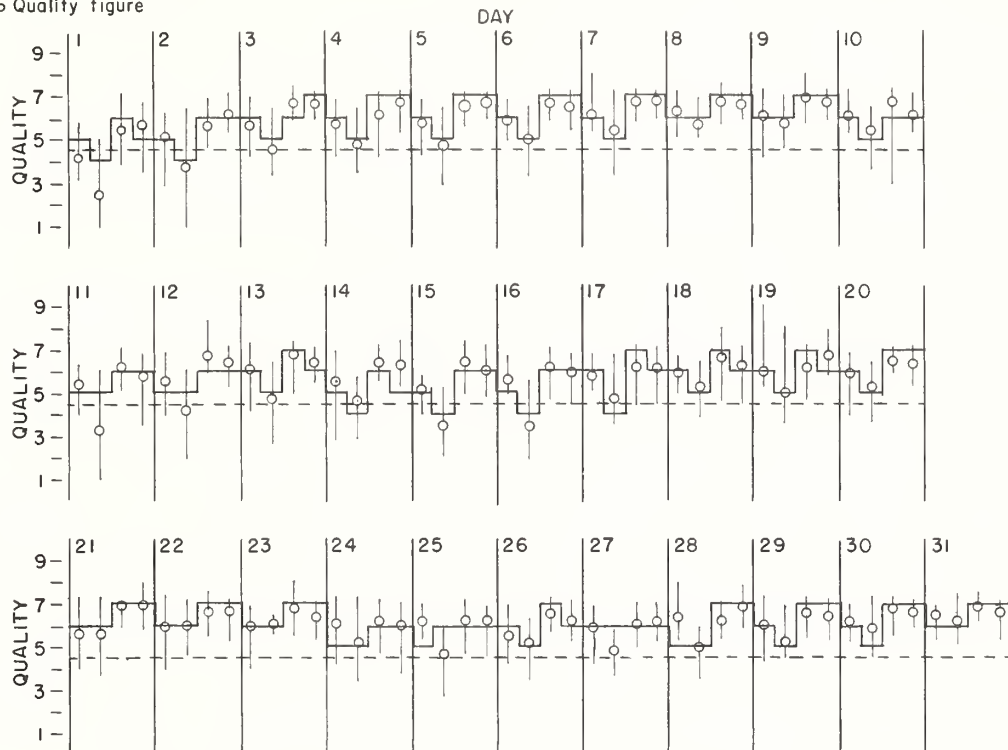
NORTH ATLANTIC

MAY 1964

—Short-term forecast

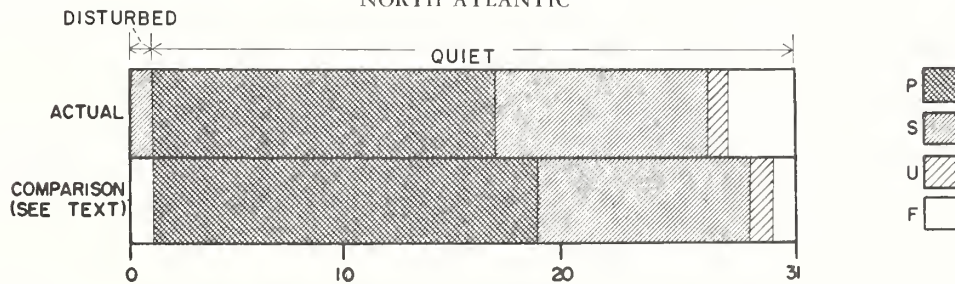
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| Range of reports

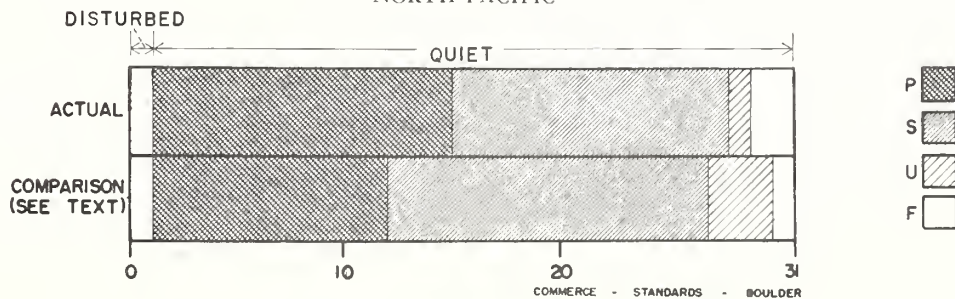


OUTCOME OF ADVANCE FORECASTS--FINAL ESTIMATES (1 TO 7 DAYS AHEAD)

NORTH ATLANTIC

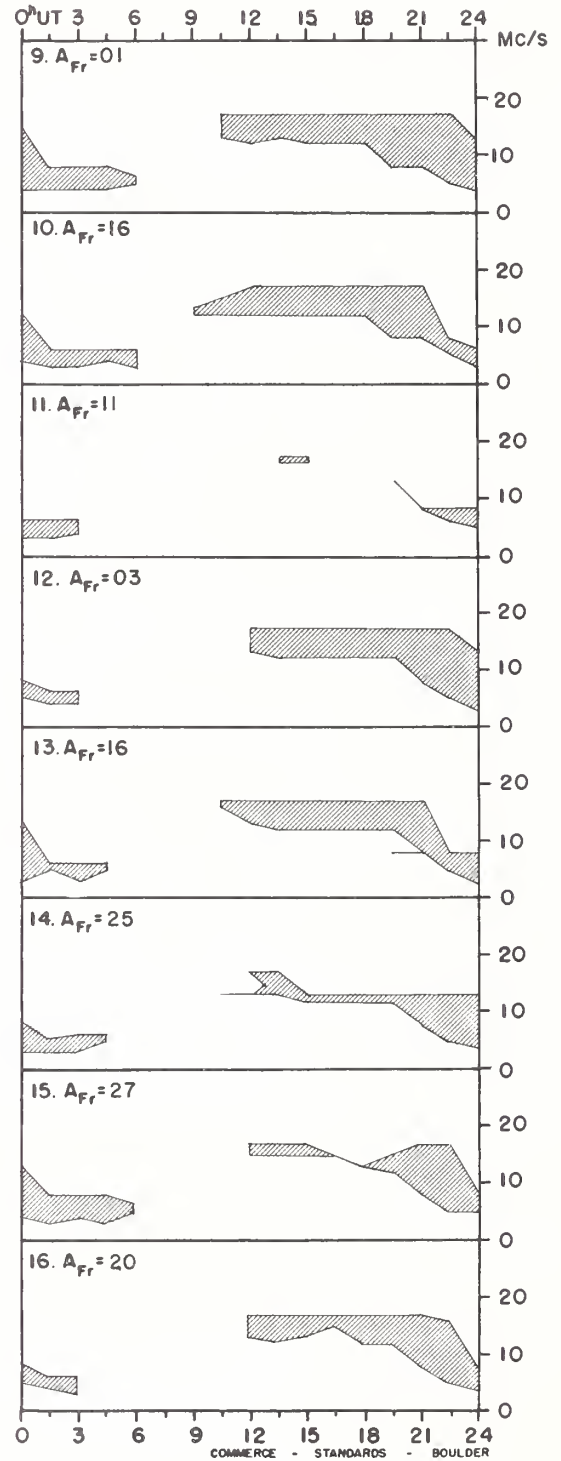
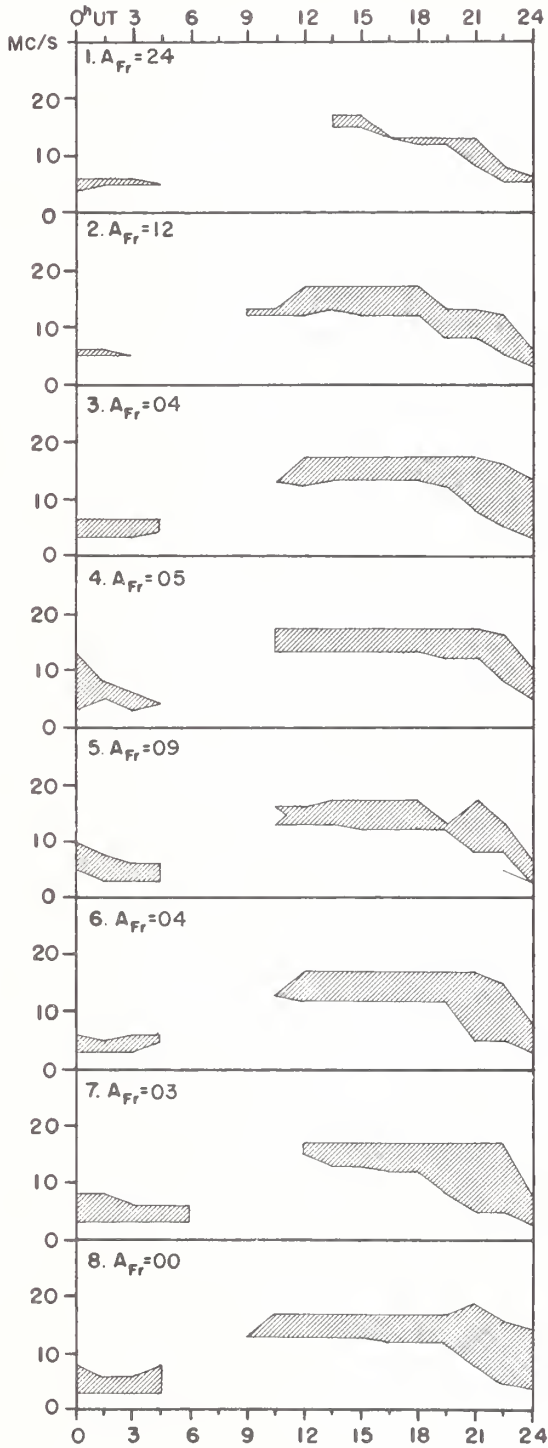


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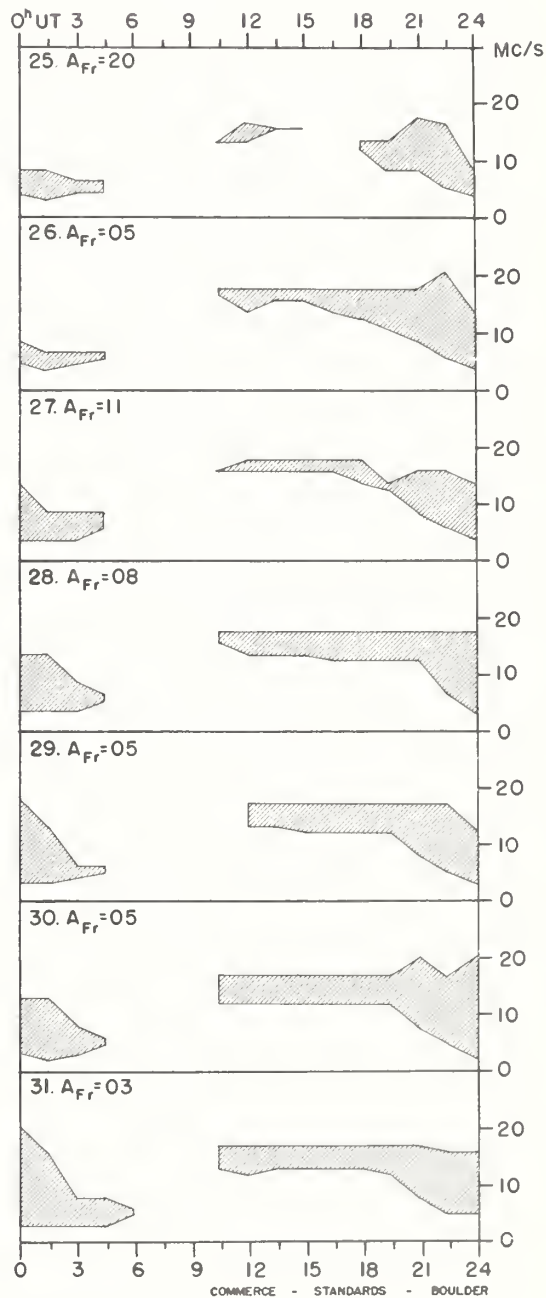
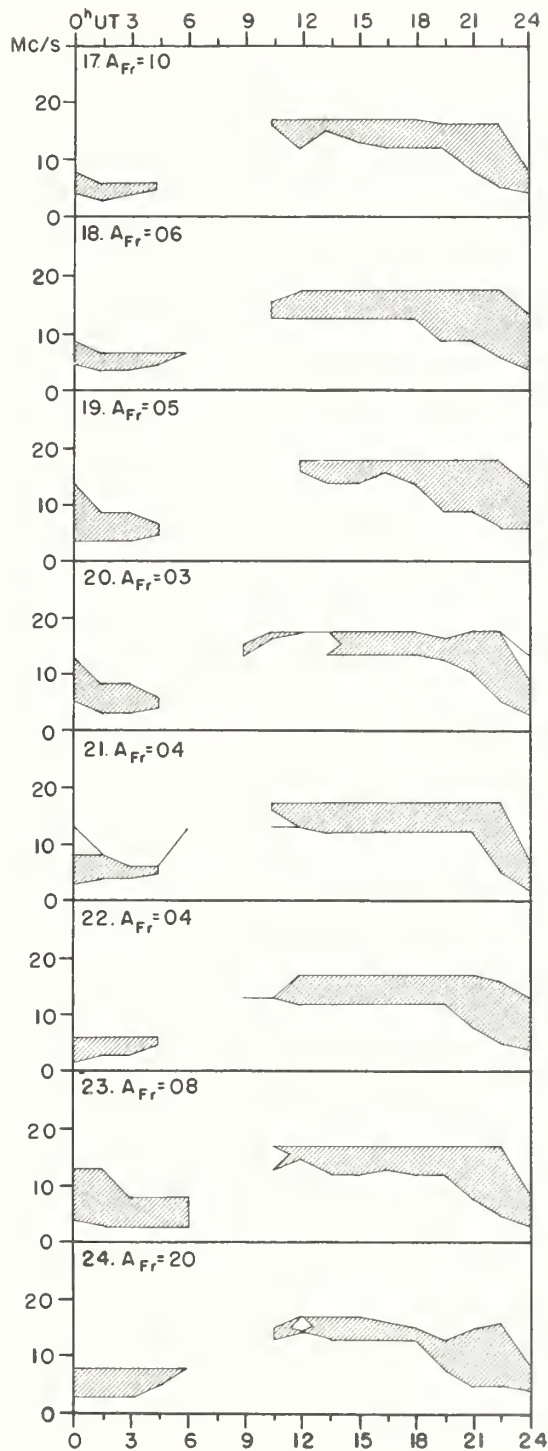


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MAY 1961



MAY 1961



Adapted from Observations by Deutsches Bundespost

IQSY ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

JUNE 1964

JUNE 1964	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
10	1305	Ft. Belvoir, Magnetic Storm 09/15XXZ				
11	0400		73	Magnetic Storm	Exists	
15	1755	Anacapri, Solar Flare 15/1446Z				
16	0400		74	Solar Activity	Exists	Flares
17	0400		75	Solar Activity	Exists	
18	0400		76	Solar Activity	Exists	
26	0400		77	Solar Calme	Exists	
27	0400		78	Solar Calme	Exists	
28	0400		79	Solar Calme	Exists	
29	0400		80	Solar Calme	Exists	

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